

1. Which one of the following is NOT a power function? **UEE 2017**

A. $f(x) = x^{-\frac{3}{5}}$

B. $f(x) = \sqrt{2}x^{\frac{3}{2}}$

C. $f(x) = \pi x^5$

D. $f(x) = (\sqrt{3})^{\frac{x}{2}}$

Grade 11 Math's Unit 1: Relations and Functions

1.3.1 Power Function with Their Graphs Competency

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By the end of this sub-unit, students will be able to:

- define power functions;**
- describe the properties of power functions in relation to their exponents;**
- determine the domains and ranges of power functions;**
- sketch the graphs of power functions;**

2. Consider the following data: 1, 3, 7, 9, 11, 13, 18, 28

then the coefficient of mean deviation about the median is equal to: **UEE 2017**

A. $\frac{1}{4}$

B. $\frac{8}{5}$

C. $\frac{5}{8}$

D. $\frac{1}{2}$

Grade 12 Maths Unit 3: Statistics

3.2.3 Coefficient of Mean Deviation (CMD)

Competencies

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By the end of this sub-unit, students will be able to:

- Calculate the coefficient of mean deviation of a given data set.
- Interpret two or more data sets by using their coefficient of mean deviation.

3. Which of the following statement describes the difference between scalar and vector quantities?

- A. Physical quantities that only have direction are scalars, while that have only magnitude are vectors.**
- B. Physical quantities that only have magnitude are scalars, while that have both magnitude & direction are vectors.**
- C. Physical quantities that only have magnitude are vectors, while that have both magnitude & direction are scalars.**
- D. Physical quantities that only have direction are scalars, while that have both magnitude & direction are scalars.**

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Grade 11 Maths unit 5: Vectors

5.1 Revision on Scalars and Vectors

Competencies

By the end of this sub-unit, students will be able to:

- define a scalar & vector quantity;
- describe the difference between a vector and a scalar quantity.

4. Let $f(x) = x^3 + 2x + 1$ and $g(x) = x^2 - 1$ be given two polynomial functions. Then which of the following is true? **UEE 2017**

A. $\frac{f(x)}{g(x)} = \frac{x^2+1}{x-1}$

C. $f(x) - g(x) = x^3 - x^2 + 2x$

B. $f(x) + g(x) = x^3 + x$

D. $f(x)g(x) = x^5 + x^3 + x^2 - 2x - 1$

Grade 10 Maths Unit 2: Polynomial Functions

Z Secret Training Institute

2.2 Operations on Polynomial functions

Competencies

At the end of this sub-unit students will be able to:

- perform the four-fundamental operation on polynomials

5. Consider the function $f(x) = x^3 - 3x^2 + 3$ on $(-2, 3)$. Then which of the following point is local minimum and local maximum of $f(x)$ respectively? **UEE 2017**

A. $(-2, -27)$ and $(0, 3)$

C. $(3, 3)$ and $(-2, -27)$

B. $(0, 3)$ and $(2, -1)$

D. $(2, -1)$ and $(0, 3)$

Grade 12 Maths Unit 2:

2.1.5 Maximum and Minimum Points

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Competences

By the end of this sub-unit, students will be able to:

- Find local maximum point and local minimum point of a given function on an interval.
- Write the equation of a tangent line and a normal line to a curve.

6. Consider the following grouped frequency distribution table. Then what is the class mid-point of the fourth class? **UEE 2017**

x	0-9	10-19	20-29	30-39	40-49
f	4	3	6	5	2

A. 55.5

B. 34.5

C. 35.5

D. 24.5

Grade 11 Maths Unit 7: Statistics

7.1 Types of Data

Competences

By the end of this sub-unit, students will be able to:

- identify qualitative and quantitative data;
- notice the difference between discrete and continuous data;
- identify ungrouped and grouped data;
- determine class interval as required to form grouped data from a given ungrouped data;
- determine class limit, class interval and class midpoint for grouped continuous data;

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7. Which of the following defines a frustum of a cone? **UEE 2017**

- A. It is a part of a cone included between the base and a horizontal cross-section made by a plane parallel to the base.
- B. It is a part of a cone included between the vertex and a horizontal cross-section made by a plane parallel to the base.
- C. It is a part of a cone included between the base and a horizontal cross-section made by a plane.
- D. It is a part of a cone included between the vertex and a horizontal cross-section made by a plane.

Z Secret Training Institute

Grade 9 maths unit 6

6.3 Frustum of pyramids and cones

Competencies

At the end of this sub-unit students will be able to:

- define frustums of a cone and pyramid.
- calculate the surface areas of frustums of pyramids and of cones.

8. Which of the following statement is true about the given infinite series? **UEE 2017**

A. $\sum_{n=1}^{\infty} (-1)^n 2^n$ is convergent

C. $\sum_{n=1}^{\infty} 2^n$ is divergent

B. $\sum_{n=1}^{\infty} \left(\frac{4}{3}\right)^n$ is convergent

D. $\sum_{n=1}^{\infty} (-1)^n \left(\frac{2}{5}\right)^n$ is divergent

Grade 12 maths Unit 2

1.4 Infinite Series

By the end of this sub-unit, students will be able to:

Z Secret Training Institute

- Define a series
- Identify Divergent or Convergent Geometric Series
- Show how infinite series can be divergent or convergent
- Show how recurring Decimals converge

9. Suppose we have 4 objects chosen 3 at a time. Then which of the following statement is true? **UEE 2017**

- A. The number of combination is 6. B. The number of combination is 24.
C. The number of permutation is 24. D. The number of permutation is 4.

Grade 11 Maths Unit 8: Probability

8.3 Permutation and Combination

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Competencies

- By the end of this unit, students will be able to:
- find the possible ways of arranging objects by using the principle of permutation; and
- explain the computational relationship between permutation and combination of objects.

10. Let θ be an angle in standard position and (x, y) be a point on the terminal side of θ , which is different from the origin. Let r be the distance from (x, y) to the origin. Then which of the following defines $\cos\theta$?

A. $\frac{r}{y}$

B. $\frac{y}{r}$

C. $\frac{r}{x}$

D. $\frac{x}{r}$

Grade 10 Maths unit 4

4.2 Basic Trigonometric Functions

Z Secret Training Institute

- define the basic trigonometric functions.
- sketch graphs of basic trigonometric functions.
- define reciprocals of basic trigonometric functions.

11. What is the coefficient of quartile deviation for the following data? UEE 2017

29, 24, 46, 52, 35, 35, 25, 15, 10, 55, 56

A. 2.85

B. 0.35

C. 0.48

D. 2.08

Grade 12 Maths Unit 3: Statistics

3.2.2 Coefficient of Quartile Deviation (CQD)

Competencies

Z Secret Training Institute

By the end of this sub-unit, students will be able to:

- determine the coefficient of quartile deviation of a given data set.**
- interpret two or more data sets by using their coefficient of quartile deviation.**

12. What is the surface area(in cm^2) of the cylinder whose radius is 2 cm and height is 7cm? **UEE 2017**

A. 49π

B. 28π

C. 36π

D. 98π

Grade 10 Maths unit 6: Solid figures

6.1 Revision cylinders and prisms

Competencies

Z Secret Training Institute

At the end of this sub-unit students will be able to:

- calculate surface area and volume of prisms and cylinders.

13. Which of the following is an irrational number? **UEE 2017**

A. 3.4000

B. $\sqrt{0.04}$

C. 1.16222...

D. $\sqrt{29}$

Grade 9 Maths Unit 2: The Number System

2.3 Irrational Numbers

Competencies

At the end of this section a student will be able to the students

➤ identify irrational numbers

➤ locate some irrational numbers on a number line

➤ perform any one of the four operations on the set of irrational numbers.

Z Secret Training Institute

14. Consider the equation $\log x + \log(x - 3) = 1$. Then what is its solution set? **UEE 2017**

A. $\{5\}$

B. $\{2, -5\}$

C. $\{-2, 5\}$

D. $\{6\}$

Grade 10 Maths Unit 3: Exponential and Logarithmic Functions

3.1 Exponents and logarithms

Competencies

At the end of this sub-unit students will be able to:

Z Secret Training Institute

- explain what is meant by exponential expression.
- state and apply the properties of exponents (where the exponents are real numbers).
- express what is meant by logarithmic expression by using the concept of exponential expression.
- solve simple logarithmic equation by using the properties of logarithm.

15. Which of the following is the correct decomposition of the rational expression $\frac{2x-3}{x^2+x-2}$?

A. $\frac{5}{3x+2} + \frac{1}{x+1}$

B. $\frac{1}{3-3x} + \frac{7}{3x+6}$

C. $\frac{1}{1-x} + \frac{5}{3x+6}$

D. $\frac{7}{3x+2} - \frac{1}{x+1}$

Grade 11 Maths Unit 2

2.1 Rational Expressions

Competency

Z Secret Training Institute

By the end of this sub-unit, students will be able to:

- define rational expression;
- identify the universal set of a given rational expression;
- show the simplified form and the necessary steps in simplify a given rational expression;
- perform the four fundamental operations on rational expression; and
- decompose rational expressions into sums of partial fractions.

16. What is the average rate of change of $g(x) = x^3 - 2x$ over the interval $1 \leq x \leq 6$?

A. $\frac{203}{5}$

B. 41

C. $\frac{37}{5}$

D. 46

Grade 12 Maths Unit 2

2.1 Introduction to Derivatives

Competencies

Z Secret Training Institute

- Understand rate of change of different quantities.
- Calculate rate of change of different quantities.
- Analyze the geometrical and mechanical meaning of derivative.
- Finding average rates of change of functions between different points.
- Finding the slope of a secant line and a tangent line to the graph of a function.
- Developing the concept of the derivative of a function at a point.

17. Given the objective function $Z = -x + 2y$ that is subjected to the constraints **UEE 2017**

$$\begin{cases} x \geq 3 \\ x + y \geq 5 \\ x + 2y \leq 6 \\ y \geq 0 \end{cases}$$

What are the maximum and minimum values of Z respectively?

A. -2 and -6

B. -2 and 1

C. 1 and -2

D. -6 and -2

Grade 12 Maths Unit 4: Linear programming

Z Secret Training Institute

4.2 Maximum and Minimum Value

Competencies

- Find maximum and minimum values of a given objective function under given constraints.

18. Which of the following matrix is the inverse of the matrix $\begin{pmatrix} 1 & -1 & 2 \\ 1 & 0 & 1 \\ 3 & 1 & 3 \end{pmatrix}$? **UEE 2017**

- A. $\begin{pmatrix} 1 & 5 & -1 \\ -3 & 0 & 1 \\ -4 & -1 & 1 \end{pmatrix}$ B. $\begin{pmatrix} -1 & 0 & 1 \\ 5 & -3 & -4 \\ -1 & 1 & 1 \end{pmatrix}$ C. $\begin{pmatrix} -1 & 0 & 1 \\ 5 & 3 & 4 \\ 1 & -1 & 1 \end{pmatrix}$ D. $\begin{pmatrix} -1 & 5 & -1 \\ 0 & -3 & 1 \\ 1 & -4 & 1 \end{pmatrix}$

Grade 11 Maths Unit 3

3.7 Inverse of a Matrix

Competency

Z Secret Training Institute

By the end of this sub-unit, students will be able to:

- find inverse of a square matrix;
- solve systems of linear equations by using inverse of coefficient matrix if possible.

19. What is the determinant of the matrix $\begin{pmatrix} \frac{1}{2} & 1 & \frac{3}{2} \\ 2 & \frac{5}{2} & 3 \\ \frac{7}{2} & 4 & \frac{9}{2} \end{pmatrix}$? **UEE 2017**

A. 0 B. $\frac{1}{2}$ C. $\frac{1}{8}$ D. 1

Grade 11 maths unit 4

Z Secret Training Institute

4.3 Determinant of Matrices of Order 3

Competencies

By the end of this sub-unit, students will be able to:

- calculate the determinate of a square matrix of order 3.

20. Which of the following is the simplified form of the expression $\frac{81^{\frac{1}{5}}}{27^{\frac{1}{5}}}$? **UEE 2017**

A. 3

B. $\sqrt[5]{9}$

C. $\sqrt[5]{3}$

D. $\frac{1}{3}$

Grade 9 Maths unit 2: The number system

2.4. The Real Number

Competencies

Z Secret Training Institute

At the end of this subunit, the students will be able to:-

➤ define real numbers

.

.

➤ use the laws of exponents to simplify expression

➤ express any positive rational number in its standard form

21. If fair six sided die is tossed once, then what is the probability of getting a factor of 4?

A. $\frac{1}{2}$

B. $\frac{1}{6}$

C. $\frac{5}{6}$

D. $\frac{1}{3}$

Grade 9 Maths unit 9: Statistics and probability

9.2. Probability

Competencies

Z Secret Training Institute

- Determine the probability of an event from a repeated experiment.
- Determine the probability of an event.

22. Which of the following statement is true about a relation? **UEE 2017**

- A. The domain and range of a relation are equal sets.
- B. The range of a relation is the set of all its first coordinates.
- C. The domain of a relation is the set of all its second coordinates.
- D. A relation from A to B is any subset of $A \times B$ for non-empty sets A and B.

Grade 10 Maths unit 1

Z Secret Training Institute

1.1 Relations

Competencies

At the end of this subunit, students will be able to:

- define patterns.
- produce sequences of patterns.
- define a relation.
- determine the domain and range of a relation.

23. When the number $43 \times 10^8 \times 10^{-5}$ is written in standard form, it equals **UEE 2017**

A. 4.3×10^4

C. 4.3×10^3

B. 43×10^3

D. 0.43×10^5

Grade 9 Maths unit 2: The number system

2.4. The Real Number

Competencies

At the end of this subunit, the students will be able to:-

Z Secret Training Institute

➤ define real numbers

.

.

➤ use the laws of exponents to simplify expression

➤ express any positive rational number in its standard form

24. If a square pyramid has side of 6cm long and its lateral faces are equilateral triangles, then what is its volume (in cm^3)? UEE 2017

A. 72

B. $3\sqrt{2}$

C. 48

D. $36\sqrt{2}$

Grade 10 Maths unit 6: Solid figures

6.2.4 Volume of Pyramids and Cones

Competencies

Z Secret Training Institute

At the end of this sub-unit students will be able to:

- calculate the volumes of a given pyramid or a cone.

25. Which of the following statement is true about types of data? UEE 2017

- A. The age of students in a class is a quantitative data.**
- B. The height of students in a class is a qualitative data.**
- C. The weight of students in a class is a qualitative data.**
- D. The gender of students in a class is a quantitative data.**

Grade 11 Maths unit 7

7. 1Types of Data

By the end of this unit, students will be able to:

Z Secret Training Institute

- identify qualitative and quantitative data;**
- notice the difference between discrete and continuous data;**
- identify ungrouped and grouped data;**
- determine class interval as required to form grouped data from a given ungrouped data;**
- make cumulative frequency table for grouped data (for both discrete and continuous data);**

26. Suppose $f(x) = 3\sqrt{x}$ and $g(x) = \frac{1}{3}x^4 + 2x$ be given two functions. Then which of the following is equal to $(f + g)'(x)$? **UEE 2017**

- A. $3x^{-\frac{1}{2}} + 4x^3 + 2$ B. $\frac{2}{3}x^{-\frac{1}{3}} + 4x^3 + 2x$ C. $\frac{2}{3}x^{-\frac{1}{3}} + 4x^3 + 2$ D. $\frac{3}{2}x^{-\frac{1}{2}} + \frac{4}{3}x^3 + 2$

Grade 12 Maths Unit 2

Z Secret Training Institute

Derivative of combinations of functions

At the end of this section the students will be able to:

- Apply the sum, difference, product and quotient of differentiation function

27. Given the system of linear equations $\begin{cases} a_1x + b_1y = c_1 \\ a_2x + b_2y = c_2 \end{cases}$

Where $a_1, a_2, b_1, b_2, c_1, c_2 \in \mathbb{R}$ and $a_2, b_2, c_2 \neq 0$, which of the following is true? **UEE 2017**

- A. If $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$, then the system has one solution. B. If $\frac{a_1}{a_2} = \frac{c_1}{c_2}$, then the system has no solution.
- C. If $\frac{b_1}{b_2} = \frac{c_1}{c_2}$, then the system has unique solution. D. If $\frac{a_1}{a_2} \neq \frac{c_1}{c_2}$, then the system has infinitely solutions.

Z Secret Training Institute

Grade 9 maths unit 2

2.2 Systems of linear equations in two variables

Competencies

- determine and verify the solution of a system of linear equations graphically, with or without technology.
- Explain system of equations may have no solution, one solution, or an infinite number of solutions
- describe a strategy to solve a system of linear equations

28. Which of the following is NOT true about regular polygon? **UEE 2017**

- A. The measure of each interior angle of an n-sided regular polygon is equal to $\frac{n(180^0)}{n-2}$
- B. It can be inscribed in a circle.
- C. A circle can be inscribed in a regular polygon.
- D. The measure of each exterior angle of an n-sided regular polygon is equal to $\frac{360^0}{n}$.

Grade 9 maths unit 5

5.3 Measures of each Interior Angle and Exterior Angle of a Regular Polygon

Competencies

At the end of this subunit, students will be able to:

- define a regular polygon
- determine each interior and exterior angle of a regular polygon

29. Which of the following is true about the cosecant value of the given angles? **UEE 2017**

A. $\csc 135^\circ = -\frac{1}{\sqrt{2}}$

C. $\csc 45^\circ = \frac{1}{\sqrt{2}}$

B. $\csc 135^\circ = -\sqrt{2}$

D. $\csc 45^\circ = \sqrt{2}$

Grade 10 maths unit 4

4.2.2 Trigonometric Values of Angles Competencies

At the end of this subunit, students will be able to:

- find the trigonometric values of angles.
- find the angle whose trigonometric value is given

Z Secret Training Institute

30. Let $a, b \in \mathbb{R}$ such that $a < b$ and f be a polynomial function. Then which one of the following statement states the *location theorem*? UEE 2017

- A. If $f(a)$ and $f(b)$ have opposite signs, then there is at least one zero of f between a and b .
- B. If $f(a)$ and $f(b)$ have the same signs, then there is at least one zero of f between a and b .
- C. If $f(a)$ and $f(b)$ have the same signs, then there exist a unique zeros of f between a and b .
- D. If $f(a)$ and $f(b)$ have opposite signs, then there is a unique zero of f between a and b .

Z Secret Training Institute

Grade 10 Maths Unit 2: Polynomial Function

2.4 Zeros of a polynomial function

Competencies

- determine the zero(s) of a given polynomial function.
- state the Location Theorem.
- apply the Location theorem to approximate the zero(s) of a given polynomial function.
- apply the rational root test to determine the zero(s) of a given polynomial function.

31. Which of the following distribution is multimodal? **UEE 2017**

A. 18, 14, 15, 10, 11, 3, 18, 12

B. 6, 10, 9, 6, 10, 4

C. 8, 7, 11, 13, 17, 9, 8, 7, 6, 11

D. 12, 13, 26, 15, 25, 38, 28, 27, 32

Grade 11 maths Unit 7

7.4.4 The Mode for a Grouped Data

Competencies

Z Secret Training Institute

- determine the mode of a given grouped data; and

- identify data that are unimodal, bimodal and multimodal.

32. Which of the following statement defines the greatest integer function given by $f(x) = \lfloor x \rfloor$?
- A. It is an integer greater than or equal to x . B. It is an integer less than or greater than x .
C. It is an integer less than or equal to x . D. It is the least integer greater than x .

Grade 11 Maths unit 1

1.3.4 The Greatest Integer (step or floor) Function

Competency

Z Secret Training Institute

By the end of this sub-unit, students will be able to:

- define the Greatest Integer Function;
- determine the domain and range of the Greatest Integer function;
- use the concept of greatest integer function for billing of shipment (postal); and
- sketch the graph of the Greatest Integer function.

33. What is the equation of a line that passes through $(-2, 5)$ and has a slope $\frac{1}{2}$? **UEE 2017**

A. $2y - x - 12 = 0$

C. $2y + x = 5$

B. $y = 2x + 12$

D. $y = \frac{1}{2}x + 5$

Grade 10 Maths Unit 7

Unit outcomes:

At the end of this unit the students will be able to:

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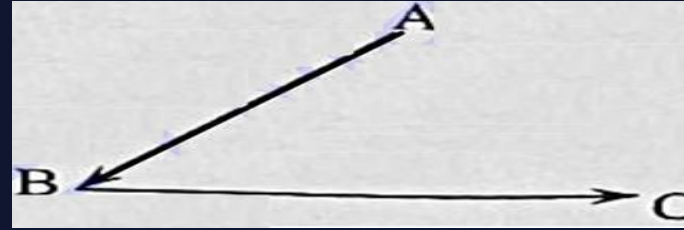
- find distance between any two given points in the coordinate plane.
- divide a given line segment into a given ratio
- describe equation of a line in different forms.
- relate the slope of parallel and perpendicular lines
- find equations of a circle in different forms

34. If two vectors $V = \overrightarrow{AB}$, and $U = \overrightarrow{BC}$ are given as shown in the figure below

Then what is the vector $U + V$? **UEE 2017**

A. $\overrightarrow{AC}$
B. $\overrightarrow{BA}$

C. $\overrightarrow{CA}$
D. $\overrightarrow{CB}$



Grade 9 Maths unit 7

7.3 Vector Operations

7.3.1 Addition of vectors

Competencies

At the end of this subunit, students will be able to:-

- determine the sum of given vectors
- determine the difference of two vectors

Z Secret Training Institute

35. Which of the following statement describes the dispersion of the data values? **UEE 2017**

- A. It compares the variability of two or more data that are independent of the units of measurement.
- B. It compares the variability in terms of different units of data.
- C. The degree to which numerical data tends to distribute about an average.
- D. It helps to describe the degree of similarity of data values.

Grade 12 Unit 3: Statistics

Z Secret Training Institute

Introduction

Competencies

By the end of this unit, students will be able to:

- know absolute and relative dispersion and their interpretation.
- deduce specific facts about measurement in statistical data.
- understand basic concepts about sampling techniques.
- appreciate the value of statistics in real life

36. Consider the following data: 13, 16, 19, 19, 19, 19, 24, 27

What is the mean deviation about the mode? **UEE 2017**

A. 4

B. 2.75

C. 3.75

D. 3

Grade 12 Maths Unit 3: Statistics

3.1.2. Mean Deviation and Quartile Deviation

Competencies

Z Secret Training Institute

By the end of this sub-unit, students will be able to:

- Compute mean deviation of a given data set (Mean Deviation about mean, median, Mode)
- describe the relative significance of mean deviation as a measure for dispersion.

37. If one of the root of the equation $2x^2 - 8x + k = 0$ exceeds the other root by 2, then what is the value of k ? **UEE 2017**

A. 1

B. 6

C. 4

D. 3

Grade 9 Maths Unit 3

2.3.2 Quadratic equation

Competencies

- Derive the quadratic formula, using deductive reasoning. **Z Secret Training Institute**
- Solve a quadratic equation of the form $ax^2 + bx + c = 0$ by using strategies such as
- determining square roots, factorizing, completing the square and applying the quadratic formula
- Identify relationship between roots and coefficients of a quadratic equation
- Solve a problem by determining or analyzing a quadratic equation.

38. Which of the following is statement defines **geometric progression? UEE 2017**

- A. It is a sequence in which the ratio between consecutive terms is a non-zero constant.**
- B. It is a sequence in which the difference between consecutive terms is a positive constant.**
- C. It is a sequence in which the difference between consecutive terms is a non-zero constant.**
- D. It is a sequence in which the ratio between consecutive terms is a positive constant.**

Grade 12 Maths Unit 1: Sequence

1.2.2 Geometric Sequence

Competencies

At the end of this Section students will be able to:

- Define Geometric sequence**
- Identify Geometric sequence from a given sequence**
- Determine the general term of Geometric sequence**
- Calculate the Geometric mean of terms in a Geometric sequence**

Z Secret Training Institute

39. Given the sequence 3, 6, 12, 24, ... then what is the 10th partial sum of the sequence?

A. 3069

B. 3075

C. 1023

D. 1027

Grade 12 Maths Unit 1: Sequence

1.3 The Sigma Notation and Partial Sum

Competencies

Z Secret Training Institute

At the end of this sub-unit students will be able to:

- Drive and use the formula for the sum of a finite arithmetic and finite Geometric Series

40. Let $A = \{x|1 \leq x \leq 10\}$ and $B = \{x|-1 \leq x \leq 10\}$ be two sets of real numbers.

What is the relative complement of A with respect to B? **UEE 2017**

- A. $\{x|-1 \leq x \leq 0\}$ B. $\emptyset$ C. $\{x|-1 \leq x \leq 1\}$ D. $\{x|-1 \leq x < 1\}$

Grade 9 Math's Unit 1

1.3 Operations on Sets

Competencies

Z Secret Training Institute

- determine number of elements in the union of two finite set.
- describe the properties of "union" and "intersection" of sets.
- determine the absolute complement of a given set.
- determine the relative complement of two sets
- determine the symmetric difference of two sets.
- determine the Cartesian product of two sets.

41. Consider the line segment PQ with $P = (1, -1)$ and $Q = (4, 2)$.

Then which of the following point divides PQ internally in the ratio of 2:1? **UEE 2017**

A. $(3, 1)$

B. $(2, 0)$

C. $(2, 1)$

D. $(3, 0)$

Grade 10 Maths Unit 7

7.2 Division of a line segment. (3 periods)

Competencies

Z Secret Training Institute

- determine the coordinates of points that divide a given line segment in a given ratio.

42. The table given below shows the age distribution of children in a small village in years.

What is the mean age of the children's (in years)? **UEE 2017**

A. 6.9

C. 7.5

B. 6.6

D. 7.2

Age interval	Frequency
2-4	4
5-7	1
8-10	2
11-13	3

Z Secret Training Institute

Grade 11 maths unit 6

7.4.1 mean for grouped data

Competencies

- By the end of this unit, students will be able to find the mean of a given grouped data.

43. Let $A = \{x \in \mathbb{Z}: -2 \leq x \leq 2\}$ and $B = \{x \in \mathbb{N}: 2^x \leq 3x + 1\}$, then $n(A \cup B)$ is equal to: **UEE 2017**

A. 10

B. 2

C. 6

D. 5

Grade 9 Math's Unit 1

1.3 Operations on Sets Competencies

Z Secret Training Institute

- determine number of elements in the union of two finite set.
- describe the properties of "union" and "intersection" of sets.
- determine the absolute complement of a given set.
- determine the relative complement of two sets
- determine the symmetric difference of two sets.
- determine the Cartesian product of two sets.

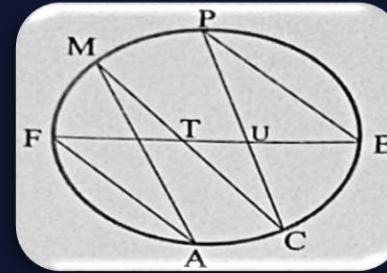
44. Consider the figure given below. If $m(\angle CPE) = 30^\circ$ and $m(\angle AFE) = 55^\circ$, then what is the value of $m(\angle AMC)$? **UEE 2017**

A. 60°

B. 30°

C. 50°

D. 25°



Grade 10 Maths Unit 6

Z Secret Training Institute

5.2 Angle Properties of circles

Competencies

At the end of this subunit, students will be able to:

- state angle properties of circles.
- apply angle properties of circles to solve related problems

45. Consider the graph of the rational function given below. Then which of the following rational function is represented by the below graph? **UEE 2017**

A. $f(x) = \frac{x^2}{1-x^2}$

B. $f(x) = \frac{x}{x^2-1}$

C. $f(x) = \frac{x}{x^2+1}$

D. $f(x) = \frac{x^2}{x^2-1}$

2.3 Rational Functions and their Graphs

Competencies

By the end of this sub-unit, students will be able to:

- define rational function;
- determine the domain of a given rational function;
- determine the range of a given rational function;
- sketch the graph of a given rational function;
- determine the intercepts and symmetry of the graph of a given rational function;
- identify asymptote type that the graph of a given function may have;
- narrate the properties of a given rational function from its graph; and
- use graphs of rational functions to solve rational inequalities.



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46. If the number of bacteria in a certain laboratory colony grows at a rate of 5% per day and assuming that there are 1000 bacteria present initially, then what would be the approximate number of bacteria present after 3 days? **UEE 2017**

A. 1105

B. 1102

C. 1158

D. 1050

Grade 10 Maths Unit 3

Z Secret Training Institute

3.6 Applications

Competencies

At the end of this sub-unit students will be able to:

- Solve problems involving exponential and logarithmic functions from real life.

47. Let $f(x) = (1 - 2x)^{\frac{1}{2}}$. Then what is the value of $f'(x)$? **UEE 2017**

A. $\frac{1}{\sqrt{1-2x}}$

B. $-\frac{1}{2}\sqrt{1-2x}$

C. $\frac{1}{2}\sqrt{1-2x}$

D. $-\frac{1}{\sqrt{1-2x}}$

Grade 12 math's Unit 2

2.1.4 Definition of Derivative

Competencies

By the end of this sub-unit, students will be able to:

- State the definition of the derivative the gradient function.
- Explain what will happen when the gradient is zero.
- Find the derivative of some functions
- Find derivatives of power functions,

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48. What is the minimum value of the function defined by $f(x) = -3 + 4x + x^2$ **UEE 2017**

A. -7

B. 1

C. 0

D. -2

Grade 10 Maths Unit 1

Unit outcomes:

At the end of this unit, the students will be able to: **Z Secret Training Institute**

- define relation
- define function
- identify types of functions
- sketch graphs of linear and quadratic functions

49. Suppose two triangles are similar by SSS similarity theorem. If the side length of one triangle are 2cm, 4cm and 6cm, and the shorter side of the other triangle is 9cm long, then what are the lengths (in cm) of the other two sides of the triangle? **UEE 2017**

- A. 9 and 21 B. 18 and 27 C. 9 and 27 D. 18 and 21

Grade 9 maths unit 6

Z Secret Training Institute

6.3. Theorems on Similar Plane Figures

Competencies

- Apply the SSS, SAS and AA similarity theorems to prove similarity of triangles

50. A boy and girl are both standing on a sun light. The boy's height is 1.6m and casts a shadow of 2m. If the girl's height casts a shadow of 1.8m, then what is the height (in meter) of the girl? **UEE 2017**

A. 1.5

B. 1.54

C. 1.68

D. 1.44

Grade 10 Maths unit 4

4.4 Applications

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Unit outcomes:

At the end of this unit, the students will be able to:

- solve some examples on real life problems involving trigonometric equations

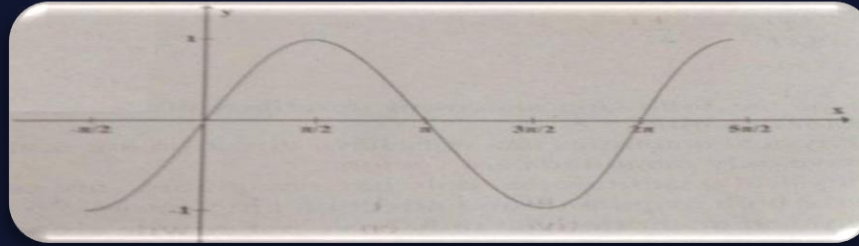
51. Consider the graph of a certain trigonometric function given below. Which one of the following functions represents the graph for $-\frac{\pi}{2} \leq x \leq \frac{5\pi}{2}$? **UEE 2017**

A. $y = \sec x$

B. $y = \sin x$

C. $y = \csc x$

D. $y = \cos x$



Grade 10 Maths unit 4

Z Secret Training Institute

Unit outcomes:

At the end of this unit, the students will be able to:

- define the basic trigonometric functions.
- sketch graphs of basic trigonometric functions.
- define reciprocals of basic trigonometric functions.
- identify trigonometric identities
- solve some examples on real life problems involving trigonometric equations

52. Which one of the following is the solution set of $5^x = 11.2$? **UEE 2017**

[Use $\log 5 = 0.6990$ and $\log 1.12 = 0.0485$]

A. 1.12

B. 1.5

C. 1.2

D. 1.69

Grade 10 Maths unit 3

3.4 Solving exponential and Logarithmic equations

Competency

- Compute exponential and logarithmic function

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53. Consider the following histogram. Which of the following frequency distribution table represents the histogram? **UEE 2017**

A.

V	12	13	14	15	16	17
f	2	1	1	1	2	1

B.

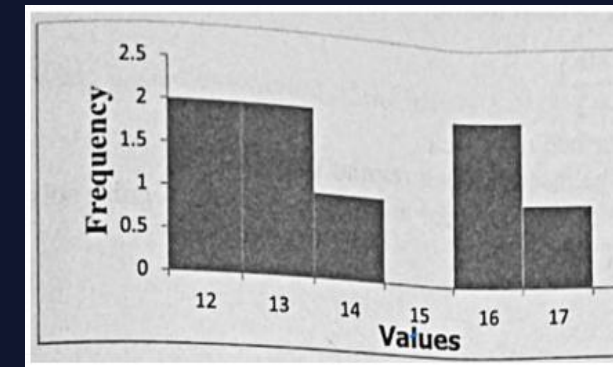
V	12	13	14	15	16	17
f	2	2	1	2	2	1

C.

V	12	13	14	15	16	17
f	2	1	1	0	2	1

D.

V	12	13	14	15	16	17
f	2	2	1	0	2	1



Grade 9 Maths Unit 9

9.1. Statistical Data

Periods allotted: 16 Periods

Competencies

- differentiate primary and secondary data.
- collect data from their environment.
- classify and tabulate primary data according to the required criteria.
- construct a frequency distribution table for ungrouped data.
- collect and represent simple statistical data using different methods such as histograms and interpret.

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54. A television company assembles flat screen and curved screen televisions. The company has to invest Birr 15,000 to assemble one flat screen and Birr 20,000 to assemble one curved screen television. The company allocates a maximum of Birr 900,000 for assembling. The company gets Birr 1800 profit from a sale of one flat screen television and Birr 2000 profit from a sale of one curved screen television. Moreover, the company has a store of maximum capacity of storing 50 televisions. Let x be the number of flat screens and y be the number of curved screens. Then which of the following inequalities should model the profit for the objective function $Z = 1800x + 2000y$? **UEE 2017**

A.
$$\begin{cases} 20,000x + 15,000y \leq 360,000 \\ x + y \leq 50 \\ x, y \geq 0 \end{cases}$$

B.
$$\begin{cases} 15,000x + 20,000y \leq 900,000 \\ x + y \leq 50 \\ x, y \geq 0 \end{cases}$$

C.
$$\begin{cases} 15,000x + 20,000y \leq 360,000 \\ x + y \leq 50 \\ x, y \geq 0 \end{cases}$$

D.
$$\begin{cases} 20,000x + 15,000y \leq 900,000 \\ x + y \leq 50 \\ x, y \geq 0 \end{cases}$$

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Unit Outcomes

By the end of this unit, you will be able to:

- Deduce how to find regions of inequality in a plane.
- Solve systems of linear inequality.
- Formulate linear programming problems.
- Solve real life problems of linear programming problems graphically.
- Use spreadsheet to solve Linear Programming Problems.

55. Which of the following statement defines favorable outcomes in a random experiment?

- A. The outcome that insure the occurrence of a particular result.**
- B. The outcome containing all sample elements.**
- C. The outcome containing only one sample element.**
- D. The outcome that have equal chance of being chosen.**

Grade 11 Maths Unit 8

8.5 Random Experiments and its Outcomes

Competencies

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By the end of this unit, students will be able to:

- represent and interpret probabilities as fractions, decimals and percentages;**
- order events from least likely to most likely and justify their choice; and**
- describe events as being more or less likely from experience (Understanding sample space outcomes and favorable outcomes in a random experiment)**

56. Given that $\log 4.8 = 0.6812$, $\log 6.93 = 0.8406$ and $\log 6.84 = 0.8351$.

then what is the value of $\sqrt{48}$? **UEE 2017**

A. 8.83

B. 6.71

C. 6.93

D. 6.84

Grade 10 Maths unit 3

3.1 Exponents and logarithms

Competencies

At the end of this sub-unit students will be able to:

- explain what is meant by exponential expression.
- state and apply the properties of exponents (where the exponents are real numbers).
- express what is meant by logarithmic expression by using the concept of exponential expression.
- solve simple logarithmic equation by using the properties of logarithm.
- recognize the advantage of using logarithm to the base 10 in calculation.
- identify the "characteristics" and "mantissa" of a given common logarithm.
- use the table for finding logarithm of a given positive number and antilogarithm of a number.
- compute using logarithm.

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57. If $\begin{pmatrix} x + y & 2 \\ 5 & 3 \end{pmatrix} = \begin{pmatrix} 7 & 2 \\ 5 & x - y \end{pmatrix}$, then what is the value of x ? **UEE 2017**

A. -2 B. -5 C. 5 D. 2

Grade 11 Unit 3

3.2 Operation on Matrices

Competencies

By the end of this sub-unit, students will be able to:

- determine the transpose of a matrix;
- determine the sum and difference of two given matrices of the same order;
- explain different properties of addition of matrices;
- multiply a matrix by a scalar;
- describe the properties of multiplication of matrices by scalars;
- determine the product of two matrices; and
- describe the properties of the product of two matrices.

- Understand Equality of matrices

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58. A worker of a company borrowed Birr 100,000 from the company's credit and saving association. She agreed to pay 10% of the loan during the agreement and on the remaining amount to pay Birr 3000 (monthly plus interest) in 36 monthly installment. What is the total amount of money she paid to the credit and saving association? **UEE 2017**

- A Birr 106,000 B. Birr 118,000 C. Birr 108,000 D. Birr 116,000

Grade 12 maths Unit 5

5.2 Time Value of Money Minimum

Learning Competencies

- Calculate payment by installment for a given simple interest arrangement.
- Calculate the compound interest of a certain amount invested for a given period of time.
- Apply the formula for compound interest to solve practical problems in business.
- Compute annuity for a give arrangement
- Define classify and calculate annuity
- Interpret annuity concept to solve real life problems
- Define different terms related to amortization

59. A company offers a discount of 25% on one of the product for promotion. What is a regular price of the product if it is purchased for Birr 99? **UEE 2017**

A. 110

B. 198

C. 132

D. 125

Grade 12 Maths unit 5

5.1 Basic Mathematical Concepts in Business

Minimum Learning competencies

- Compare quantities in terms of ratio.

- Calculate the rate of increase and the rate of decrease in price of commodities

- Solve problems on proportional variation in business.

- Solve problems on compound proportion

- Find a required percentage of certain given amount

- Compute problems on percentage increase or percentage decrease

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60. Which of the following statement is true about the given system of linear equation? **UEE 2017**

- A. $\begin{cases} x + 3y = 6 \\ 2x - 5y = 2 \end{cases}$ is a homogeneous system. B. $\begin{cases} 2x + y = 0 \\ x - 4y = 0 \end{cases}$ is a non-homogeneous system.
- C. $\begin{cases} x + 3y = 2 \\ 2x - 5y = 1 \end{cases}$ is a non-homogeneous system. D. $\begin{cases} 3x - y = 1 \\ x + 3y = 2 \end{cases}$ is a homogeneous system.

Grade 11 Maths Unit 3

3.5 System of Linear Equations

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Unit Outcomes

By the end of this unit, you will be able to:

- Write system of equation in matrix form; and
- Identify homogeneous and nonhomogeneous system of linear equations.



Thank you!!! Z Secret Training Institute