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2018 E.C GRADE 12 FIRST SEMESTER MATHEMATICS MODEL EXAMINATION

JANUARY 2026 G.C

TIME ALLOWED: 3:30 HOURS

GENERAL DIRECTIONS: This booklet contains FIRST SEMESTER MATHEMATICS MODEL EXAMINATION. In this examination, there are a total of 70 MULTIPLE CHOICE QUESTIONS. CAREFULLY SELECT THE BEST ANSWER and BLANKEN ONLY THE LETTER OF YOUR CHOICE ON THE SEPARATE ANSWER SHEET PROVIDED.

Follow the instructions on the answer sheet and the examination paper carefully. Use only PENCIL to mark your answers. Your answer mark should be HEAVY and DARK, covering the answer space completely. Please erase all unnecessary marks completely including answers you have changed from your answer sheet. You are allowed to work on the exam for 3:30 HOURS. When time is called, you must immediately stop working, put your pencil down, and wait for future instructions. Any form of cheating or the attempt to cheat in the examination will result in an automatic dismissal from the examination hall and cancellation of your score(s). Please make sure that you have written all the required information on the answer sheet before you start to work on the examination.

DO NOT TURN THIS PAGE OVER UNTIL YOU ARE TOLD TO DO SO.

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1. Let R be a relation on the set $S = \{-2, -1, 0, 1, 2, 3\}$ defined by

$$R = \{(x, y): y = x^2 - 2;\ x, y \in A\}.$$

Which of the following is the range of R?

A. $\{-2, -1, 0, 1, 2, 3\}$

B. $\{-2, -1, 1, 2\}$

C. $\{-2, -1, 0, 1, 2\}$

D. $\{-2, -1, 2\}$

2. Which of the following is true about the inverse of the relation

$$R = \{(x, y): y \geq x^2 - 1 \text{ and } y < x + 1\}?$$

A. $R^{-1} = \{(x, y): x \geq y^2 - 1 \text{ and } y > x + 1\}$

B. $R^{-1} = \{(x, y): x \geq y^2 - 1 \text{ and } x < y + 1\}$

C. Domain of R^{-1} is $\{x \in \Re: -1 < x < 2\}$

D. Range of R^{-1} is $\{x \in \Re: -1 \leq y < 3\}$

3. Which of the following power functions has the set of real numbers as its range?

A. $y = 3x^{-\frac{7}{5}}$

B. $y = 3x^{-\frac{2}{5}}$

C. $y = -3x^{\frac{2}{5}}$

D. $y = -3x^{\frac{9}{5}}$

4. If $f(x) = 2x + 1$ and $(f \circ g)(x) = 3 - 4x$, then which of the following statements is true?

A. $g(x) = f(x)$

B. $(g \circ f)(x) = 1 - 4x$

C. $g(x) = -1 - 2x$

D. $(g \circ f)(x) = -1 - 4x$

5. The inverse of a function $f(x) = \frac{x}{x+2}$ is equal to

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

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

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

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

6. An electrician charges a base fee of Birr 200 plus Birr 500 for each hour of work. How many hours will he need to work to earn Birr 2000?

A. 3 hours and 30 minutes

B. 3 hours and 36 minutes

C. 6 hours and 30 minutes

D. 6 hours and 36 minutes

7. Which of the following is a rational expression?

A. $\frac{1+\sqrt{x^4}}{x^2+x}$

B. $\frac{x^{0.5}}{x^2+1}$

C. $\frac{|x|+1}{x^2-x}$

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

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8. A simplification of the rational expression $\left(\frac{1}{x-1}+\frac{1-x}{x+1}\right)\div\frac{x}{x^2-1}$ yields

A. $\frac{3-x}{x}$
C. $\frac{3+x}{x}$
B. $3+x$
D. $3-x$

9. Decomposing the rational expression $\frac{2x^2+x-2}{x^3-x}$ as a sum of partial fractions gives

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

10. The solution set of the equation $\frac{2}{x^2+6x+8}=\frac{1}{x+2}-\frac{x}{x+4}$ is

A. $\{-2,1\}$
C. $\{1\}$
B. $\{2,-1\}$
D. $\{-2\}$

11. Solving the inequality $\frac{x^2+x-6}{x^2-4}>0$ gives

A. $x<-3$ or $x>-2$ but $x\neq 2$
C. $-3<x<-2$
B. $x<-3$ and $x>-2$ but $x\neq 2$
D. $x<-3$ or $x>2$

12. Which of the following statements is true about the graph of $f(x)=\frac{x-1}{x^2-1}$?

A. Its x-intercept is 1.
B. $y=1$ is its horizontal asymptote.
C. $x=1$ is its vertical asymptote.
D. Its y-intercept is 1.

13. What is the value of b for which the matrices

$A=\begin{bmatrix}1 & 2\\ 3 & -1\end{bmatrix}$ and $B=\begin{bmatrix}a-b & 2\\ a & -1\end{bmatrix}$ are equal?

A. 1
C. 3
B. 2
D. 5

14. Let $A=\begin{bmatrix}1 & 2\\ 3 & -1\end{bmatrix}$ and $B=\begin{bmatrix}0 & 2\\ 1 & 0\end{bmatrix}$ be two matrices. Which of the following statements is true?

A. $A^t-B=\begin{bmatrix}1 & 1\\ 1 & 1\end{bmatrix}$
C. $(2AB)^t=\begin{bmatrix}4 & 4\\ -2 & 12\end{bmatrix}$
B. $(A^t+B)^t=\begin{bmatrix}1 & 3\\ 5 & -1\end{bmatrix}$
D. $\frac{1}{2}(A-A^t)=\frac{1}{2}\begin{bmatrix}0 & 1\\ -1 & 0\end{bmatrix}$

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15. Let A and B be symmetric matrices of the same order n and let k be a nonzero constant. Then which of the following statements is **NOT** always true?

A. $A + A^t$ is symmetric

B. $kA + B$ is symmetric

C. AB is symmetric

D. $A - A^t = [0]_{n\times n}$

16. Which of the following matrices is row equivalent to matrix $A = \begin{bmatrix} 3 & 12 & 6 \\ 1 & 1 & -1 \\ 1 & 2 & 3 \end{bmatrix}$?

A. $\begin{bmatrix} 1 & 4 & 2 \\ 1 & 1 & 1 \\ 1 & 2 & 3 \end{bmatrix}$

B. $\begin{bmatrix} 1 & 4 & 2 \\ 0 & -1 & -1 \\ 0 & -2 & -1 \end{bmatrix}$

C. $\begin{bmatrix} 1 & 4 & 2 \\ 0 & 3 & -3 \\ 0 & -2 & 1 \end{bmatrix}$

D. $\begin{bmatrix} 1 & 4 & 2 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$

17. Which one is the solution set of the system of linear equations

$$\begin{aligned} x + y + z &= 1 \\ 2x - y + z &= 0 \\ x + 2y - z &= -3 \end{aligned}$$

A. $\{(-1, 0, 2)\}$

B. $\varnothing$

C. $\{(-t, 0, 2t) : t \in \Re\}$

D. $\{(-1, 0, 1)\}$

18. Let $A = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix}$ be a matrix. If $\left[\begin{array}{ccc|ccc} 1 & 1 & 1 & 1 & 0 & 0 \\ 0 & 1 & 2 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 \end{array}\right]$ is reduced to the matrix in row echelon form $\left[\begin{array}{ccc|ccc} 1 & 0 & 0 & 1 & a & -1 \\ 0 & 1 & 0 & 0 & 1 & b \\ 0 & 0 & 1 & 0 & 0 & 1 \end{array}\right]$ using appropriate elementary row operations, which of the following is the inverse of A?

A. $\begin{bmatrix} 1 & -2 & 1 \\ 0 & 1 & -1 \\ 0 & 0 & 1 \end{bmatrix}$

B. $\begin{bmatrix} 1 & 2 & 1 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$

C. $\begin{bmatrix} 1 & -1 & 1 \\ 0 & 1 & -2 \\ 0 & 0 & 1 \end{bmatrix}$

D. $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix}$

19. The perimeter of a given triangle is 12cm. The shortest side is 2cm shorter than the longest side of the given triangle. The longest side is 2cm less than the sum of the other two sides of the given triangle. What is the area of this triangle?

A. 6cm^2

B. 8cm^2

C. 10cm^2

D. 12cm^2

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20. Consider the matrix $A = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 2 & 1 \\ 1 & 2 & 0 \end{bmatrix}$. What is the sum of the cofactors of the diagonal entries of A?

A. 3
B. 2
C. 0
D. -2

21. Let A be a square matrix of order n and k be a nonzero scalar. Which of the following conditions ensure that A has a nonzero determinant?

A. An entire row (or column) of A consists of zeros.
B. Two rows (or columns) of A are equal.
C. A row (or column) is a scalar multiple of another.
D. The matrix A is an invertible matrix.

22. Which of the following is the adjoint of the matrix $A = \begin{bmatrix} 1 & -1 \\ 1 & 0 \end{bmatrix}$?

A. $\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix}$
B. $\begin{bmatrix} 0 & 1 \\ -1 & 1 \end{bmatrix}$
C. $\begin{bmatrix} -1 & 1 \\ -1 & 0 \end{bmatrix}$
D. $\begin{bmatrix} 1 & 1 \\ -1 & 0 \end{bmatrix}$

23. If a matrix A is invertible, what is the determinant of A^{-1}?

A. $\det A$
B. $-\det A$
C. $\frac{1}{\det A}$
D. $(\det A)^2$

24. Consider the following system of linear equations:

$$x + y - z = 1$$
$$2x + z = 4$$
$$y - z = 5$$

What is the value of x in this system when solved by Cramer's rule?

A. $\dfrac{\begin{vmatrix} 1 & 1 & -1 \\ 4 & 0 & 1 \\ 5 & 1 & -1 \end{vmatrix}}{\begin{vmatrix} 1 & 1 & -1 \\ 2 & 0 & 1 \\ 0 & 1 & -1 \end{vmatrix}}$

B. $\dfrac{\begin{vmatrix} 1 & 1 & 1 \\ 2 & 0 & 4 \\ 0 & 1 & 5 \end{vmatrix}}{\begin{vmatrix} 1 & 1 & -1 \\ 2 & 0 & 1 \\ 0 & 1 & -1 \end{vmatrix}}$

C. $\dfrac{\begin{vmatrix} 1 & 1 & -1 \\ 2 & 4 & 1 \\ 0 & 5 & -1 \end{vmatrix}}{\begin{vmatrix} 1 & 1 & -1 \\ 2 & 0 & 1 \\ 0 & 1 & -1 \end{vmatrix}}$

D. $\dfrac{\begin{vmatrix} 1 & 1 & -1 \\ 2 & 4 & 1 \\ 0 & 1 & 5 \end{vmatrix}}{\begin{vmatrix} 1 & 1 & -1 \\ 2 & 0 & 1 \\ 0 & 1 & -1 \end{vmatrix}}$

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25. Consider the data points $(-1,-2)$, $(0,1)$, and $(1,0)$. Which of the following is an interpolating polynomial function p of degree at most two?

A. $p(x) = x^3 - 2x^2 + 1$

B. $p(x) = -x^2 + x + 2$

C. $p(x) = 2x^2 - x + 1$

D. $p(x) = -2x^2 + x + 1$

26. Which property distinguishes a vector from a scalar?

A. Units of measurement

B. Magnitude with direction

C. Having magnitude only

D. Being always positive

27. Which statement best describes scalar multiplication of a vector?

A. It changes only the direction of the vector.

B. It changes only the magnitude of the vector.

C. It changes both magnitude and possibly direction.

D. It has no effect on the vector.

28. If $\vec{u}$ and $\vec{v}$ are nonzero position vectors in a coordinate plane, and θ is the angle between $\vec{u}$ and $\vec{v}$, which of the following statements is always true?

A. $\cos\theta = -\frac{\vec{u}\cdot\vec{v}}{|\vec{u}|\,|\vec{v}|}$

B. $\vec{u}\cdot\vec{u} = \|\vec{u}\|^2$

C. $(\vec{u}-\vec{v})\cdot(\vec{u}+\vec{v}) = \|\vec{u}\|^2 + \|\vec{v}\|^2$

D. $(\vec{u}+\vec{v})^2 = \vec{u}^2 + \vec{v}^2$

29. If $\vec{u}$ and $\vec{v}$ are nonzero vectors with that same tails, then which of the following is a nonzero scalar or a nonzero vector?

A. $(\vec{u}\times\vec{v})\cdot\vec{v}$

B. $\vec{u}\cdot(\vec{u}+\vec{v})$

C. $(\vec{u}\times\vec{v}) + (\vec{v}\times\vec{u})$

D. $\vec{u}\times\vec{u}$

30. A conveyor belt generates a force $\vec{F} = 5\hat{\imath} - 3\hat{\jmath} + 3\hat{k}$ (in newton) that moves a suitcase from point $P(1,1,1)$ to point $Q(9,4,7)$ (in meters) along a straight line. What is the work done (in joules) by the conveyor belt?

A. 9

B. 18

C. 40

D. 49

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31. Consider the line passing through the point $P(1,4)$ and $Q(2,2)$. Which of the following statements is true?

A. Its vector equation is $(x,y) = (1,4) + t(1,2), t \in \Re$.

B. Its parametric equation $x = 1 + t, y = 2 + t, t \in \Re$.

C. Its standard equation is $2x + y - 6 = 0$.

D. It contains the point $(8,2)$.

32. What is the translation vector $\vec{u}$ that maps a point $P(2,1,0)$ to a new location $Q(5,4,3)$?

A. $\vec{u} = (3,3,3)$

B. $\vec{u} = (5,4,3)$

C. $\vec{u} = (2,3,3)$

D. $\vec{u} = (1,2,-1)$

33. Which of the following is the equation of the image of the reflection of the circle $(x-2)^2 + (y-3)^2 = 1$ through the line $l: y + x = 0$?

A. $(x+2)^2 + (y+3)^2 = 1$

B. $(x+3)^2 + (y+2)^2 = 1$

C. $(x-3)^2 + (y-2)^2 = 1$

D. $(x-2)^2 + (y-3)^2 = 1$

34. What is the image of the point $P(3,-4)$ under a rotation by 810° about the origin?

A. $(3,-4)$

B. $(-4,3)$

C. $(3,4)$

D. $(4,3)$

35. Let $T(x,y) = (x+3, y-2)$ be a translation, and let M be a reflection about the origin. What is the image of the point $(-4,3)$ under T followed by M?

A. $(-4,3)$

B. $(-1,1)$

C. $(-1,-1)$

D. $(1,-1)$

36. Which one of the following data is classified as quantitative?

A. Student's mathematics final exam scores

B. Student's family educational qualification

C. Student's activities in a class

D. Student's sex category

37. Which one of the following is continuous data?

A. Total secondary schools in a city

B. Number of students in a class

C. Family size in each household

D. Teachers: students ratio in a school

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38. The following raw data represents grade 12 students' 15% Mathematics test achievements.

15	8	7	3	11	9	10	6	12	5
13	4	9	10	9	13	7	6	1	9
12	11	4	4	10	10	5	3	2	10

If we want to group them in to 5 classes, which of the following are respectively the class width to the nearest whole number and frequency of the 3th class?

A. 2 and 7
B. 3 and 7
C. 5 and 8
D. 4 and 9

39. From the survey in a certain Oromia high schools, the monthly salaries (in Birr) of 200 teachers taken from ungrouped data in which the highest observed salary Birr 27,589 and the lowest salary was Birr 11,500 are required to be given in 8 categories of frequency distribution as shown in the table below

Monthly salary (in Birr)	Number of teachers
$11500 \leq x < 13510$	40
$13511 \leq x < 15521$	32
$15522 \leq x < 17532$	45
$17533 \leq x < 19543$	17
$19544 \leq x < 21554$	22
$21555 \leq x < 235675$	13
$23566 \leq x < 25576$	11
$25577 \leq x \leq 27589$	20

Which of the following is TRUE?

A. 66 teachers are monthly paid birr 21557 and more
B. 117 teachers are paid monthly below birr 17534
C. The class mark of the third class is 18538
D. 44 teachers are paid greater than 27589

40. A graph that is constructed by using the lines to join the mid points of each intervals of grouped frequency distribution is

A. Histogram
B. Bar graph
C. Cumulative Frequency curve
D. Frequency polygon

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41. The following grouped frequency distribution shows 40% first semester grade 11 mathematics Final examination scores of 50 students

	Scores	Frequency
8	6 – 10	2
13	11 – 15	5
18	16 – 20	6
23	21 – 25	7
28	26 – 30	12
33	31 – 35	10
38	36 – 40	8

Which of the following is true?

A. The mean score is 26.4
B. The fourth class is the median class
C. The sixth class is the modal class
D. 75th percentile is 29.75

42. In how many different ways can we arrange 7 students in a table of five seats for photo?

A. 840 ways
B. 120 ways
C. 2520 ways
D. 5040 ways

43. In how many ways 4 teachers and 4 students make a discussion on problem solving around a circular table, if no two students are to seat together?

A. 144 ways
B. 576 ways
C. 36 ways
D. 16 ways

44. Bontu has 7 different books and wants to take at least one on a field trip. In how many ways can she choose?

A. 128 ways
B. 5040 ways
C. 64 ways
D. 127 ways

45. Using Pascal's triangle, what is the coefficient of x^2y^3 in the expansion of $(x-y)^5$?

A. 5
B. -5
C. 10
D. -10

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46. A school director randomly selected 6 teachers from a school staff of 5 mathematics, 4 IT and 2 English teachers. What is the probability that exactly 3 mathematics teachers, 2 IT teachers and 1 English teacher are selected?

A. $\frac{20}{77}$
B. $\frac{6}{11}$
C. $\frac{42}{77}$
D. $\frac{7}{11}$

47. Let S be sample space associated with a random experiment, $P(S)$ be probability of the sample space S and $P(E)$ be probability of an event E. Which of the following must be true for any event E in a sample space S ?

A. $P(E) < 0$
B. $0 \leq P(E) \leq 1$
C. $P(S) > 1$
D. $P(E) + P(E') < 1$

48. Out of 65 students in your class, 38 drink coffee and 40 drink tea. If each student drinks at least one, what is the probability of students who drink both tea and coffee?

A. $\frac{3}{13}$
B. $\frac{3}{13}$
C. $\frac{1}{5}$
D. $\frac{3}{5}$

49. Which of the following is TRUE about a sequence?

A. A sequence is a function whose domain is all real numbers
B. The functional values of a sequence are the terms of a sequence
C. The domain of a sequence is negative integers
D. Terms of a sequence must always be increasing

50. If the 35^{th} term and the 105^{th} terms of an Arithmetic progression are respectively 120 and 820, then which of the following is TRUE?

A. The common difference is 5
B. The first term of the sequence is 20
C. The n^{th} term of the sequence is $5(n-23)$
D. 0 is the 23^{th} term of the Arithmetic progression

51. Which of the following describes a geometric sequence?

A. Each term is obtained by adding a fixed number
B. Each term is multiple of a fixed non-zero number
C. Each term is obtained by subtracting a fixed number
D. Each term must be greater than the previous term

52. Which of the following is a convergent sequence?

A. $a_n = n$
B. $a_n = (-1)^n$
C. $a_n = \frac{1}{n}$
D. $a_n = n^2$

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53. If the general term of a sequence is given by $a_n = \frac{4}{(n+3)(n+4)}$, which one of the following is the sum the first n terms, S_n of the sequence?

A. $S_n = \frac{n}{n+5}$

B. $S_n = \frac{n}{4(n+4)}$

C. $S_n = \frac{n}{5(n+5)}$

D. $S_n = \frac{n}{n+4}$

54. To which of the following number does the series, $\sum_{n=1}^{\infty}\left(\frac{12}{(n+3)(n+4)}\right)$ converge?

A. 3

B. 4

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

D. 1

55. When we convert the recurring decimal $0.1\overline{24}$ in to fraction, it becomes

A. $\frac{41}{330}$

B. $\frac{124}{1000}$

C. $\frac{123}{900}$

D. $\frac{31}{250}$

56. A student has a plan to save 45,450 Birr to purchase different teaching aids. In the first month, he saves 400 Birr. Every month after that, he saves 250 Birr more what he/she saves the previous month deposited. How long will it take him to save 45,450 Birr?

A. 25 months

B. 18 months

C. 20 months

D. 22 months

57. A ball is dropped from a height of 20 meters. Each bounce reaches 75% of the previous height. What is to distance the ball travels before coming to rest?

A. 120 meters

B. 60 meters

C. 140 meters

D. 115 meters

58. Which one of the following correctly describes rate of changes?

A. **A positive rate of change** is the case when the value of one quantities say x increases and the other related quantity say y decrease

B. **A Negative rate of change** is the case when the value of two related quantities x and y decrease at the same time

C. **A Negative rate of changes** is the case when the value of one quantities say x increases and the other related quantity say y also increases

D. **A Zero rate of changes** is the case when the value of one quantities x increases and the other related quantity say y remains constant.

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59. Which of the following best describes the derivative of a function at a point?

A. It is the slope of the secant line between two points on the curve

B. It is the average rate of change over an interval

C. It is the slope of the tangent line to the curve at that point

D. It is the area under the curve from 0 to that point

60. If $f(x) = \sqrt{x + \frac{1}{x}}$, then which of the following is equal to $f(x)f'(x)$?

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

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

C. $\frac{x^2+1}{2x^2}$

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

61. Which of the following is True about the function, $f(x) = 2x^3 - 3x^2 - 36x + 1$

A. f is decreasing $(-\infty, -2) \cup (3, \infty)$

B. $f(-2)$ is a local minimum of f

C. The critical numbers of f are $x = -2, 3$

D. $f(3)$ is a local maximum

62. Which one of the following is the equation of tangent line to the graph of the function, $f(x) = \sqrt{x}$ at the point $(1, 1)$?

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

B. $y = x + 1$

C. $y = x - 1$

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

63. Suppose the side of an isosceles right-angled triangle is increasing at the rate of $4.5cm/sec$. Find the rate at which the area is increasing at the instant when the side is $6cm$

A. $54\ cm^2/sec$

B. $13.5cm^2/sec$

C. $27\ cm^2/sec$

D. $18\ cm^2/sec$

64. Which one of the following is ant-derivative of $f(x) = 4x^3 - 3x^2 + 2x - 1$?

A. $F(x) = 12x^2 - 6x + 2 + c$

B. $F(x) = 4x^4 - 3x^3 + 2x^2 - x + c$

C. $F(x) = 4x^2 - 3x + 2 - x + c$

D. $F(x) = x^4 - x^3 + x^2 - x + c$

65. Evaluate the definite integral, $\int_1^4 \left(\frac{5}{2}\, x^{\frac{3}{2}}\right) dx$

A. 31

B. 32

C. 15.5

D. 16.5

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66. Which one of the following is the area of the region enclosed by the graphs of $f(x) = -3x^2 + 12$ and $g(x) = 3x^2 - 12$ on the interval $[-2, 2]$?

A. $\frac{32}{3}$

B. 32

C. $\frac{16}{3}$

D. 64

67. Suppose that the speed of a car is given by $V(t) = 4t\ m/s$ and assume that the distance at $t = 0\ s$ is 0 m. what is the total distance covered by the car after $t = 6\ s$.

A. $24m$

B. $72m$

C. $36m$

D. $60m$

68. Which of the following is the mean deviation about the mean of the data set in the frequency table below?:

Value (x)	1	2	3	4	5
Frequency	3	3	2	1	1

A. 5.4

B. 1.08

C. 2.4

D. 10.8

69. Which one of the following is the variance of the given raw data?

5 4 2 1 3

3 2 3 5 2

A. 3

B. 1.4

C. 1.6

D. 2

70. A researcher has a list of 1,000 employees and decides to survey every 10th person on the list. What sampling method is being used?

A. Cluster Sampling

B. Systematic Random Sampling

C. Stratified Sampling

D. Convenience Sampling

THE END!!

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