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Parent's Signature

Full Name _____ Grade - 10 Section _____ 4th Quarter Final Exam

Subject – Math Year: 2012 E.C Name of the teacher: _____ Time allowed: 3hrs

General instruction: - All your answers must be marked on the answer sheet format posted on the

Telegram

Read each of the following questions carefully and write '**True**' if the statement is correct or '**False**' if it is

wrong. (1 pt. each)

_____ 1. If α & β are acute angles and $\alpha + \beta = 90^\circ$, then angle α and β are called co-functions.

_____ 2. For $0^\circ < x < 180^\circ$ the solution set of the trigonometric equation $\sin^2 x - \frac{1}{2} = 0$ is

$\{45^\circ, 150^\circ\}$.

_____ 3. For $x \in \mathbb{R}$ (Real number), $x - 1$ is a factor of the polynomial function $f(x) = x^5 + 1$.

_____ 4. Suppose $\cos \theta = 0.8$ and $\csc \theta < 0$, then the value of $\tan \theta$, is $-\frac{3}{4}$.

_____ 5. If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.

_____ 6. The simplified form of $\{\cos 110^\circ\} \cdot \{\sin 30^\circ\}$ is $\frac{1}{2}$.

Choose the correct answer from the following questions and write down the letter of your choice on the space provided. (1.5 pts. each)

_____ 7. In a right triangle if $\cos(x) = \frac{3}{5}$ and $\cos(y) = \frac{4}{5}$, then what does $\tan(x)$ equal?

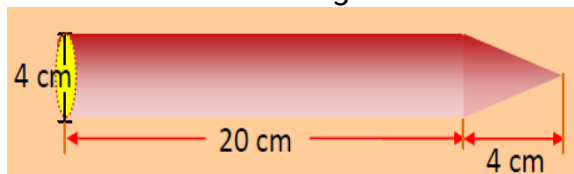
A. $\frac{3}{5}$

B. $\frac{5}{4}$

C. $\frac{4}{3}$

D. $\frac{3}{4}$

_____ 8. Which one of the following is the volume of the following composite solid figure?



A. $\frac{256\pi}{3}$

B. $\frac{216\pi}{3}$

C. $\frac{280\pi}{3}$

D. $\frac{296\pi}{3}$

_____ 9. What is the area of a regular hexagon with side 12 units long.

$132\sqrt{3} u^2$ b. $6\sqrt{3} u^2$ c. $216\sqrt{3} u^2$ d. $32\sqrt{3} u^2$

_____ 10. If the sum of the measures of the interior angles of a regular polygon is

1440°, then what is the measure of each interior angle?

- A. 132° B. 144° C. 124° D. 118°

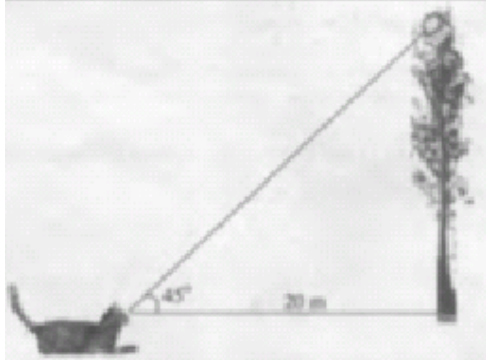
_____ 11. Which one of the following is not the zero of a polynomial function $f(x) = x^3 - x$?

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

_____ 12. What is the measure of a central angle subtended by a 3cm chord and radius of a circle 3cm long?

- A. 120° B. 60° C. 80° D. 110°

_____ 13. A cat is lying on a level ground 20 meters away from the base of a tree. The cat can see a bird's nest directly above the base of the tree. The angle of elevation from the cat to the bird's nest is 45°. How far above the base of the tree is the bird's nest?



- A. 20m B. $15\sqrt{2}$ C. $20\sqrt{3}$ D. 15

_____ 14. If $\log 2 = a$, and $\log 3 = b$, then what is the value of $\log 12$?

- A. $a + b$ B. $a + 2b$ C. $2a + b$ D. $a + 3b$

_____ 15. If $2^x = 3^y$ for positive real number x and y , then which of the following is true?

- A. $x = y = 1$ B. $x > y$ C. $x < y$ D. $x = y$

_____ 16. The solution set of the inequality $|2x - 1| \geq 5$ is

- A. $\mathbb{R} \setminus [-2, 3]$ B. $[-2, 3]$ C. $\{-2, 3\}$ D. $\mathbb{R}$

_____ 17. How many real roots do the quadratic equation $x^2 + 2x + 1$ have?

- A. One B. Two C. No roots D. cannot be determined

_____ 18. If the point A ($b, 4$) is 10 units away from B ($0, -2$), then the possible value(s) of b is (are):

- A. 10 B. $\{-8, 8\}$ C. $2\sqrt{3}$ D. 4 and 6

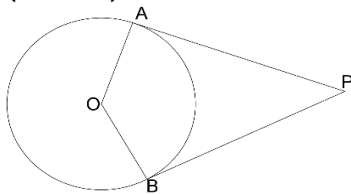
_____ 19. Which of the following lines is parallel to the line $5x - 2y = 0$.

- A. $-5x - 2y = 1$ B. $-5x + 2y = 6$ C. $y = \frac{-5}{2}x$ D. $2x + 5y = -4$

_____ 20. What is the value of $\sec 420^\circ$?

- A. 2 B. $\frac{\sqrt{3}}{2}$ C. $\frac{\sqrt{3}}{3}$ D. $\frac{\sqrt{2}}{2}$

_____ 21. On the circle shown below, O is the center while PA and PB are tangent lines. If $m(\angle AOB) = 110^\circ$, then find $m(\angle APB)$.

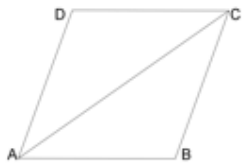


- A. 80° B. 70° C. 120° D. 140°

_____ 22. If the measure of an angle is 583° in clock wise direction, then in which quadrant does its terminal side fall?

- A. I B. II C. III D. IV

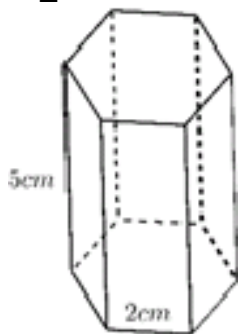
_____ 23. The figure shown below is rhombus ABCD, with $m(\angle CAB) = 35^\circ$. What is the measure of $\angle CDA$?



- A. 110° B. 240° C. 70° D. 100°

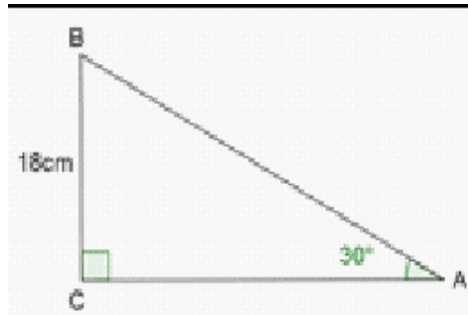
_____ 24. As shown in the figure below the height of a right prism is 5cm and its base is regular hexagon of side 2cm. What is the volume of this prism? (Hint: use Area

$$= \frac{1}{2} nr^2 \sin \frac{360}{n}$$



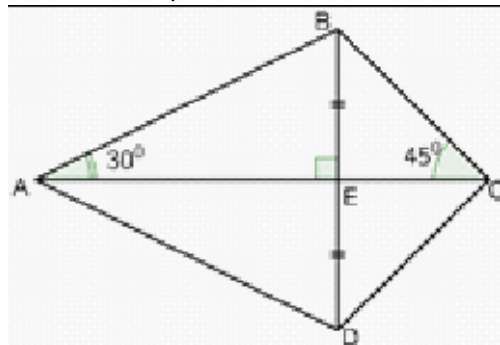
- A. $20\sqrt{3}$ B. $15\sqrt{3}$ C. $30\sqrt{3}$ D. $45\sqrt{3}$

_____ 25. For the right angle triangle given below if $BC = 18\text{cm}$, and $m(\angle A) = 30^\circ$, then how long is AC ?



- A. $6\sqrt{3}$ B. $18\sqrt{3}$ C. $12\sqrt{2}$ D. $6\sqrt{2}$

_____ 26. Let quadrilateral ABCD and the given conditions be as shown in the figure below. If $BD = 12\text{ cm}$, then what is the area of this quadrilateral?



- A. $24(\sqrt{3} + 1)$ B. $36(\sqrt{3} + 1)$ C. $24\sqrt{3}$ D. $36\sqrt{3}$

Solve the following problems and write down your final and simplified answer on the space provided. (1 pt. each)

27. An inscribed angle is formed by two congruent chords in a semi-circle of radius $r = \sqrt{2}$ units.
Find the length of the chords? _____.

28. What is the volume of a spherical gas balloon with diameter 6cm? _____.

29. If the base perimeter of a cylinder is 6π cm, then find the volume of a cylinder whose lateral area is $144\pi\text{cm}^2$. _____.

30. If x is a positive integer, then what is the solution set of $|x + 4| - 4 > 6$? _____.

31. If $\sin \theta = \frac{3}{5}$ and θ , is an obtuse angle, then find the value of $\cos \theta$. _____.

32. What is the solution set of the equation $2\sin \theta - \tan \theta = 0$ for $0 < \theta < \pi$. _____.

33. What is the simplified form of: $\cot \theta \cdot \csc \theta \cdot (1 - \cos^2 \theta)$? _____.

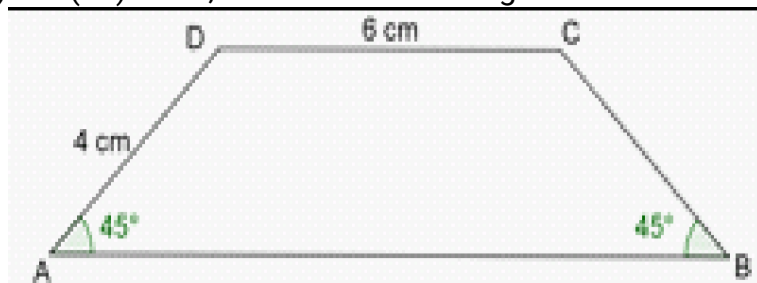
34. What is the range of the graph of a 'sine' function? _____.

I. Work out the following problems. Show the necessary steps clearly. (1 pt.)

If $\cos \theta = -\frac{1}{\sqrt{10}}$ and θ , is in the third quadrant, then find $\cot \theta$?

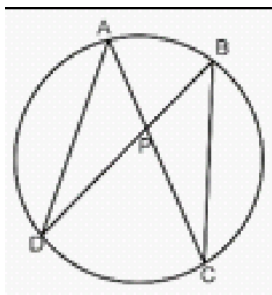
Show that the area of an equilateral triangle of side "**x-units**" long is $\frac{\sqrt{3}}{4}x^2$ sq. unit.

Trapezium ABCD, with $AB \parallel DC$, is given as shown in the figure below. If $DC = 6$ cm, $AD = 4$ cm and $m(\angle A) = m(\angle B) = 45^\circ$, then what is the length of side AB ?



35. A right circular cylinder, which is closed at its upper and lower bases, has height 8 cm. If the diameter of the base is 8 cm, then what is its total surface area?

36. In the circle below, chords AC and BD intersect at a point P inside the circle, if $m(\angle DAC) = 35^\circ$ and $m(\angle ACB) = 30^\circ$, then $m(\angle APB) = ?$



37. A right prism stands on triangular base whose sides are 6 cm, 8cm, 10cm and the height is 20 cm. Find the volume of the prism.

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ከ7-12 ላላችሁ ተማሪዎች

እንደሚታወቀው ከ2015 ዓ.ም ጀምሮ የዩኒቨርሲቲ መግቢያ ፈተና ከ9ኛ-12ኛ ክፍል ያለውን የሚያጠቃልል ነው። ይህም ተማሪዎች ላይ ጫና መፍጠሩ የማይቀር ነው። እኛም ከ2015 ዓ.ም የት/ት ዘመን ጀምሮ በነፃ Mathematics ትምህርትን ከ9ኛ-12ኛ ክፍል ላላችሁ ተማሪዎች Example & Exercise Solution ጨምሮ ቀለል ባለ እና በሚገባችሁ መንገድ ለየት ያሉ YouTube video እያዘጋጀን የምናግዛችሁ መሆኑን ስናሳውቃችሁ በታላቅ አክብሮት ነው። ከእናንተ የሚጠበቀው በትኩረት መከታተል ብቻ ነው።

Thank You

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