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Math_Questions_0038

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1. How do you write $\frac{1}{3}\pi r^2 = v$, in terms of r ?

2. Given that A, B and C , are nonzero real numbers, what is the y -intercept of the graph $y = A \sin(bX) + C$ in the standard (x, y) coordinate plane
 - a. A
 - b. C
 - c. $C - A$
 - d. $C + A$
 - e. $C + AB$

3. An airplane is 1500 miles from its destination. If the airplane continues at its present average speed, it will arrive at its destination 1 hour late. If the airplane's average speed for the rest of the trip is increased by 50 miles per hour, it will arrive on time. In miles per hour, what is the airplane's present average speed?
 - f. 30
 - g. 150
 - h. 200
 - i. 250
 - j. 300

4. $\log_3(3 \log_3(3, 3))$ [the 3 following the first log is little, the three following the second log is little, but the 3 after that is big like the first 3 in parentheses]
 - a. 0
 - b. 1
 - c. $\log_9(3)$
 - d. $(\log_3(3))^2$
 - e. $3(\log_3(3))^2$

5. What would the graph of $|x| < 3$ and $|y| < 5$, look like in the standard (x, y) coordinate plane?

6. If θ is an angle measure such that $0 < \theta < \pi/2$, and $\sin \theta = m/n$, where m and n are positive real numbers, then $\tan \theta$ equals?

- a. $m/n - m$
- b. $n/n^2 - m^2$
- c. $\sqrt{n^2 - m^2}/n$
- d. $n/\sqrt{n^2 - m^2}$
- e. $m/\sqrt{n^2 - m^2}$

7. James is designing a logo for the school teams jerseys. He decides to outline the logo with a regular hexagon (6 sides of equal length and 6 interior angles of equal measure) with a side length of 4 inches. What measure should he use for each interior angle in the regular hexagon?

- a. 135 degrees
- b. 120 degrees
- c. 108 degrees
- d. 60 degrees
- e. 45 degrees

8. The imaginary number " i " is defined such that $i^2 = -1$. What does " i " + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + i^8 + i^9 equal?

- a. -1
- b. 0
- c. 1
- d. " i "
- e. $12 + i$

9. In the standard (x, y) coordinate plane, the graph of $f(x-3) + 1$ is the graph of $f(x)$ shifted?

- a. left 1 and down 3
- b. left 3 and down 1
- c. left 3 and up 1
- d. right 3 and down 1
- f. right 3 and up 1

10. Suppose $\cos(x+y) = 1/4$ and $\cos x \cos y = 5/24$. What is the value of $\cos(x-y)$?

Note: $\cos(x+y) = \cos x \cos y - \sin x \sin y$, and $\cos(x-y) = \cos x \cos y + \sin x \sin y$

- a. $1/24$
- b. $1/6$
- c. $3/14$
- d. $11/48$
- e. $5/6$

11. Written with no negative exponents, $x^{-2} + x^3 =$

12. Whenever x is a positive integer and y is a negative integer, which of the following expressions is always positive?

- a. $-x-y$
- b. $(x+1)^2 + y$
- c. $x^3 - y^2$
- d. $-(y^2/(-x-1))$
- e. y^3/x^2