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Name: _____ Hr: _____

1. Given functions $f(x) = 2x - 5$ and $g(x) = \frac{1}{2x}$ which of the following would be equivalent to $f(g(x))$? [6,708]
- A. $x-5$
 B. $4x^2-5$
 C. $\frac{1}{2(2x-5)}$
 D. -4
 E. $(\frac{1}{x}) - 5$
2. Given $\sin\theta < 0$ and $\tan\theta = \frac{\sqrt{3}}{1}$ what is θ . [6,704]
- F. $\frac{\pi}{4}$
 G. $\frac{7\pi}{6}$
 H. $\frac{4\pi}{3}$
 J. $\frac{3\pi}{2}$
 K. $\frac{7\pi}{4}$
3. Solve $\log 3^x + \log 5 = \log 45$ for x . [6,707]
- A. $\sqrt{5}$
 B. 2
 C. 1
 D. .5
 E. 0
4. Which of the below are equivalent to $e \bullet \ln e^3$ [6,707]
- F. $3e^3$
 G. e^4
 H. $3e \bullet \ln e^1$
 J. 1
 K. *no solution*
5. If the point (0, 3) is your starting point and (1,6) is next, followed by (2,12) write an exponential growth equation for this data: [6,702]
- A. $y = 3(2x)^2$
 B. $y = 3(2)^x$
 C. $y = 3(x)^2$
 D. $y = 3(2x)$
 E. $y = 2(x)^3$
6. Sue has made a drawing using math functions. Her parabola $y=(x+2)^2 - 6$ needs to be moved two spots to the left and up one spot. Which of these would work? [16,706]
- F. $y=(x+2)^2 + 1$
 G. $y=(x+4)^2 - 7$
 H. $y= x^2 + 8x + 11$
 J. $y= x^2 + 2x + 1$
 K. $y= -2(x+2)^2 - 5$
7. In a geometric sequence with a starting value of 2 and a common ratio between terms of 1.5, what is the 12th term, rounded to the nearest whole number? [6,703]
- A. 19
 B. 132
 C. 173
 D. 259
 E. 3.0×10^6
8. Given the general equation for a parabola $y=ax^2+a$, if $a < 0$ which of the following statements must be true of the parabola?
- I. The y intercept must be negative
 II. The roots are negative
 III. The vertex is below the x axis. [16,705]
- F. I is true and II and III are false
 G. II is true and I and III are false
 H. I and II are true
 J. II and III are true
 K. I and III are true
9. The graph of a certain trig function has a y intercept of 1. Which of the following answers would fit this situation? [6,705]
- A. both $y=\sin x$ and $y=\cos x + 1$
 B. both $y=\tan x + 1$ and $y=1\sin x + 1$
 C. both $y=\cos x$ and $y=\sin (x + 2)$
 D. both $y=\tan x$ and $y=\sin x$
 E. both $y=\cos x$ and $y=\tan x$
10. Find the mean, median and mode for the following data set: {23,23,25,28,30,40} ? Round to the tenths place. [19,701]
- F. mean: 28, median: 27, mode: 23
 G. mean: 28.2, median: 25,28 mode: 23
 H. mean: 26.5, median: 28.2, mode: 23
 J. mean: 28.2, median: 26.5, mode: 23
 K. *none of the above are correct*

11. Gas prices increased from year 1 to year 2 by 3%. From year 2 to year 3 they increased by 7%. If in year 3 they were \$3.99, what was the price in year 1? [16,701]
- A. \$3.50
 B. \$3.62
 C. \$3.63
 D. \$3.89
 E. \$4.40

12. A circle is circumscribed in a square with sides of 8 units. What is the exact area that is inside the square but is not inside the circle [7,702]

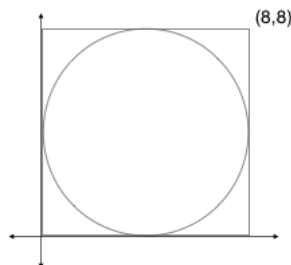
F. 13.7

G. $4(16 - \pi)$

H. $16 - 16\pi$

J. $16\pi - 64$

K. $(x - 4)^2 + (y - 4)^2 = 16$



13. Given the three horizontal lines that appear to be parallel ARE parallel, and angle f is 60° and angle d is 70° , what is sum of the measures of angles g and c? [7,704]

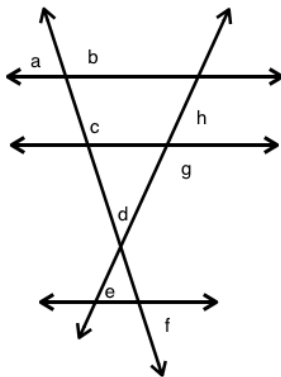
A. 50°

B. 180°

C. 230°

D. 240°

E. 250°



14. Josh has a 90% weighted average. His homework counts for 15% of his grade and his tests count for 85%. Given that he performs 10% better on his tests than his homework, what was his percentage on tests? [19,601]

F. 91.5%

G. 90.5%

H. 90%

J. 88.5%

K. 87.5%

15. A line segment has an endpoint of (2,3) and a midpoint of (5,a). Its other endpoint? [7,511]

A. (7,3a)

B. (7, 3 + a)

C. (8,3 + a)

D. (8, 3 + 2a)

E. (8, 2a - 3)

16. The polynomial $f(x) = x^3 + x^2 - x - 2$ is divided by $x-2$. What is the remainder? [1,703]

F. -2

G. 2

H. 8

J. 9

K. $x^2 - x$

17. The inequality $x^2 - 5x + 4 \leq 0$ yields which of the following solution sets? [1,702]

A. $1 \leq x \leq 4$

B. $-1 \leq x \leq -4$

C. $0 \leq x \leq 4$

D. $-4 \leq x \leq 1$

E. *there is no solution*

18. The Probability of $A \cup B$ is 95%. The probability of $A \cap B$ is 30%. The probability of A is 55%. What is the probability of B (p(B)). [19,704]

F. 30%

G. 40%

H. 60%

J. 70%

K. 80%

19. At Samantha's Smoothies, they make a blended treat by combining 2 of 3 kinds of ice cream with 2 of 5 kinds of fruit. How many different smoothies can be made? [19,603]

A. 10

B. 25

C. 30

D. 60

E. 120

20. Use Trig Identities to simplify $\frac{1}{\tan\theta\cos\theta}$: [6,706]

F. $\sin\theta$

G. $\sec\theta$

H. $\tan\theta$

J. $\cot\theta$

K. $\csc\theta$