

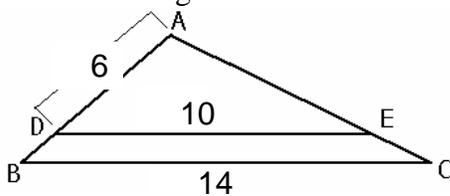
FCE 1

GRADING GUIDE

(SENSITIVE TESTING MATERIALS)

1. Simplify $\left(\frac{-2x^{\frac{1}{3}}}{y^{\frac{1}{2}}}\right)^3$. $\frac{-8x}{y^{\frac{3}{2}}}$ or $-8xy^{-\frac{3}{2}}$ or $\frac{-8}{x^{-1}y^{\frac{3}{2}}}$

2. Given the following triangle with side DE parallel to side BC and lengths in centimeters, what is the length of side DB?



$$DB = 2.4 \text{ or } \frac{24}{10}$$

3. Find the point where the following lines intersect $\begin{cases} 2x + y = 8 \\ x - 2y = 9 \end{cases}$.
- $$x = 5, y = -2$$

4. Given $y = \log_2 x$, what is the value for x when $y = 5$?

$$x = 32$$

5. What are the domain and range of the real valued function $y = \frac{1}{\sqrt{t-5}}$?

Domain : $(5, \infty)$ Range : $(0, \infty)$

6. Where does the graph of the function $f(x) = x^2 - 7x + 12$ cross the x -axis?

$(4, 0)$ and $(3, 0)$

7. Simplify $\frac{a+b}{\frac{1}{b} + \frac{1}{a}}$.

ab

8. Simplify the following expression: $\log_3(5) + \log_3(7)$.

$\log_3 35$

9. Given $f(a) = 1 + 4a$ and $g(b) = 2b^2$, what is $f(3) - g(4z)$?

$$13 - 32z^2$$

10. If you double the perimeter of a square, what happens to its area?

It increases by a factor of four.

11. If $|3 - 4x| > 2$, solve for x .

$$\frac{1}{4} > x, x > \frac{5}{4}$$

12. Solve the following equation for x : $\frac{12}{\frac{x}{3} + 2} = 5$.

$$x = \frac{6}{5}$$

13. What is the range of $f(x) = 3\sin(2x)$?

Range : $[-3,3]$.

14. Write the number 90 as a product of prime factors. $2 \times 3 \times 3 \times 5$

15. Using trigonometric identities for sine and cosine, simplify $\frac{\tan(\theta) * \sec(\theta) * \cos(\theta)}{\sin^2(\theta)}$

$$\frac{1}{\sin \theta \cdot \cos \theta}$$

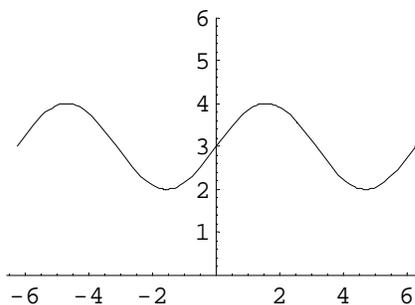
16. What is a function describing this graph?

a. $f(x) = \sin(3x)$

b. $f(x) = 3\sin(x)$

c. $f(x) = \sin(x) + 3$

d. $f(x) = \sin(x + 3)$



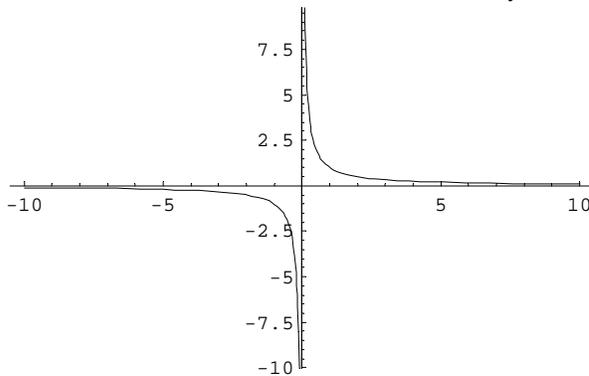
Correct answer: c.

17. Determine the roots of $x^2 - 2x + 5 = 1$. $1 \pm \frac{\sqrt{-12}}{2}$ or $1 \pm \frac{\sqrt{12}i}{2}$ or $1 \pm \sqrt{-3}$ or $1 \pm \sqrt{3}i$

18. Two trains depart from Washington D.C. at the same time. One heads due north toward New York at 120 MPH and the other heads due west toward California at 50 MPH. Assuming both trains are traveling in a straight line, how far apart are they after 1 hour?

$\sqrt{16900}$ miles we also accept $\sqrt{120^2 + 50^2}$ miles

19. Sketch the graph of the function $h(t) = \frac{1}{t}$. Identify three points on your graph of $h(t)$.



also you must pick and ID three points

20. A line is drawn through the points (1, 2) and (3, 5). Another line is drawn through the points (3, 0) and (6, -2). What is the relationship between the two lines?

$m_1 = \frac{3}{2}$, $m_2 = \frac{-2}{3}$ these lines are intersecting, perpendicular lines