

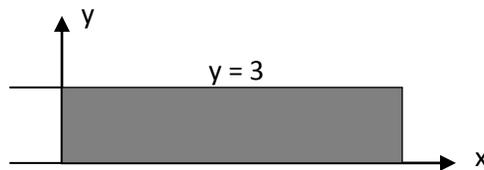
Sample Algebra Test

1. $(xy^3)^2 =$
(a) x^2y^3 (b) x^2y^6 (c) $(xy)^6$ (d) x^2y^5 (e) $(xy)^5$

2. $\sqrt{3}(\sqrt{3}+2) =$
(a) $9+2\sqrt{3}$ (b) 5 (c) $3+2\sqrt{3}$ (d) $\sqrt{3}+2\sqrt{3}$ (e) 11

3. The shaded area (including the boundary) represents the graph of which of the following sets of inequalities?

- (a) $x \leq 3$ and $y \leq 3$
- (b) $x \leq 3$ and $y \geq 0$
- (c) $0 \leq x \leq 3$ and $y \geq 0$
- (d) $y \leq 3$ and $x \geq 0$
- (e) $0 \leq y \leq 3$ and $x \geq 0$



4. $\frac{x-3}{8} - \frac{7}{4} = \frac{5}{8}$ has a solution of

- (a) -12 (b) -6 (c) 15 (d) 16 (e) 22

5. If $x^2 + 2x = 3$, then x could equal

- (a) -3 (b) -2 (c) -1 (d) 0 (e) 3

6. $x^3(2x^{-2} + 4x) =$

- (a) $2x + 4x^4$ (b) $2x^{-6} + 4x^3$ (c) $2x^5 + 4x^4$ (d) $2x + 4x$ (e) $2x^{-5} + 4x^4$

7. When factored, $y^2 - 7y + 12 =$

- (a) $y(y-7) + 12$ (b) $y(y-7) + 5$ (c) $(y+2)(y+6)$ (d) $(y+3)(y+4)$ (e) $(y-3)(y-4)$

8. $\frac{x}{5y} \div \frac{2x}{3y} =$

- (a) $\frac{3}{10}$ (b) $\frac{2x^2}{15y^2}$ (c) $\frac{x}{15y}$ (d) $\frac{10}{3}$ (e) $\frac{x+3y}{2x+5y}$

9. If $f(x) = \frac{x+3}{5-x}$, then $f(a+4) =$

- (a) $\frac{a+7}{1-a}$ (b) $\frac{a+7}{9-a}$ (c) $\frac{38-6a}{5-a}$ (d) $\frac{23-3a}{5-a}$ (e) $\frac{a+7}{5-a}$

10. Which are factors of $x^2 - 3x + 2$?

- (I) $x+1$ (II) $x-2$ (III) $x-3$

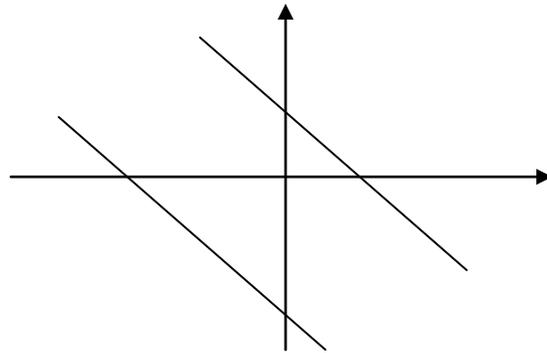
- (a) I only (b) II only (c) III only (d) I and II only (e) II and III only

11. $(32)^{2/5} + (16)^{1/4}$

- (a) $(48)^{1/10}$ (b) 4 (c) 6 (d) 8 (e) $\frac{84}{5}$

12. The two parallel lines represent the graphs of which of the following pair of equations?

- (a) $x - 2y = 3$ and $x - 2y = 7$
 (b) $x + y = 1$ and $x + y = -2$
 (c) $x + y = 3$ and $2x + 2y = 3$
 (d) $x + y = 3$ and $x - y = 5$
 (e) $x - y = 7$ and $x - y = 14$



13. For any x , $|x - 7| =$

- (a) $x - 7$ (b) $|7 - x|$ (c) $|x + 7|$ (d) $-x - 7$ (e) $-(x + 7)$

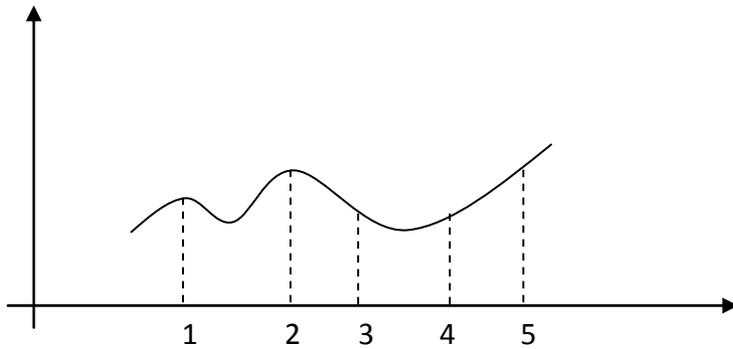
14. $\log_6 4 + \log_6 9 =$

- (a) 2 (b) $\log_6 13$ (c) $\frac{13}{6}$ (d) 78 (e) $\log_6 \frac{4}{9}$

Sample Calculus Readiness Test

1. Definition: A function is increasing on the interval $[a, b]$ if and only if $f(x_1) < f(x_2)$ whenever $x_1 < x_2$, where x_1 and x_2 are any numbers in $[a, b]$.

The function f , pictured in the graph below, is increasing on the interval

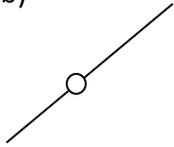
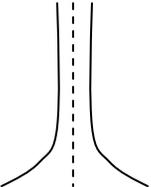
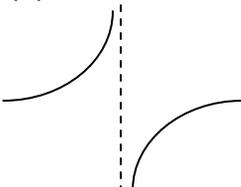
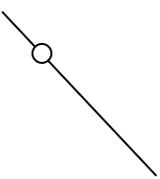


- (a) $[1, 2]$ (b) $[2, 3]$ (c) $[3, 4]$ (d) $[4, 5]$ (e) none of the above

2. Given a rectangle with sides of length x and width y . Suppose the length x is doubled and the width y is halved. The new perimeter is

- (a) $4x + y$ (b) $(2x)\left(\frac{y}{2}\right)$ (c) $2x + \frac{y}{2}$ (d) $x^2 + y$ (e) $x^2 + \frac{y}{2}$

3. Which of these curves best resembles the graph of $f(x) = \frac{(x-2)(x+3)}{(x+3)}$?

- (a)  (b)  (c)  (d)  (e) 

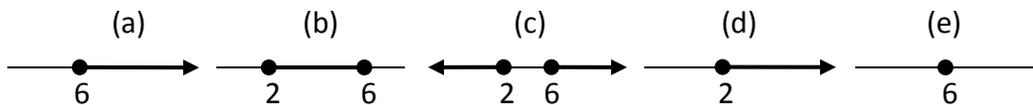
4. If $F(x - 2) = \frac{x+3}{x-4}$, then $F(5) =$

- (a) -6 (b) $\frac{10}{3}$ (c) 5 (d) $\frac{23}{4}$ (e) 8

5. If $\log_2 16 = 8 \cdot 2^{-x}$, then $x =$

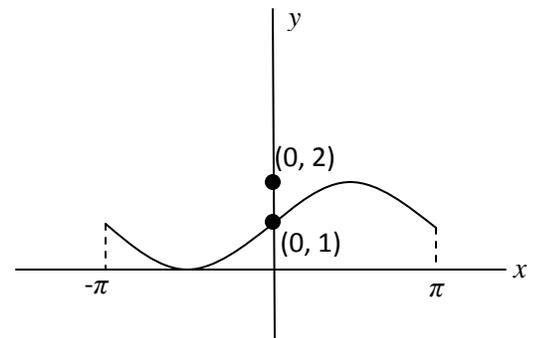
- (a) -7 (b) $-\frac{4}{3}$ (c) -1 (d) $-\frac{2}{3}$ (e) 1

6. The graph representing $|x - 4| \geq 2$ is



7. Which of these choices best describes the alteration made to the graph of the sine curve, $f(x) = \sin x$, for $-\pi \leq x \leq \pi$?

- (a) The amplitude of the graph was doubled.
(b) The graph was shifted to the left π units.
(c) The period of the graph was decreased to π units.
(d) The graph was reflected about the x -axis.
(e) The graph was shifted up one unit.



Answers to Sample Calculus Readiness Test: 1d, 2a, 3b, 4b, 5e, 6c, 7e