

1. Solve for x : $\frac{x-2}{3} - \frac{x+1}{12} = \frac{4x-3}{12}$

- a) $x = 4$
- b) $x = 6$
- c) $x = 0$
- d) $x = -6$
- e) $x = -4$

2. Solve for x : $\frac{2}{x+6} - \frac{4}{x-6} = \frac{4x}{x^2-36}$

- a) $x = 6$
- b) $x = -6$
- c) $x = -2$
- d) $x = 2$
- e) There is no solution.

3. Solve for x : $2x^2 + 5x - 3 = 0$.

- a) $x = 1, x = \frac{3}{2}$
- b) $x = -1, x = -\frac{3}{2}$
- c) $x = -3, x = \frac{1}{2}$
- d) $x = 3, x = -\frac{1}{2}$
- e) There is no solution.

4. Determine the number and nature of the solutions to $2x^2 - 2x + 3 = 0$.

- a) There are two nonreal solutions.
- b) There are two real solutions.
- c) There is exactly one real solution.
- d) There is exactly one nonreal solution.
- e) There are no solutions.

5. Solve the equation $y^3 + 2y^2 = 16y + 32$.

- a) $y = -4, y = 4$
- b) $y = -2, y = 2, y = 4$
- c) $y = -4, y = -2, y = 2$
- d) $y = -4, y = -2, y = 4$
- e) $y = -4, y = 2, y = 4$

6. Solve the equation $\sqrt{16-6x} = x$.

- a) $x = 0$
- b) $x = 2$
- c) $x = -8$
- d) $x = -8, x = 2$
- e) There is no solution.

7. Solve the equation: $|x^2 + 2x| = 1$.

- a) $x = -1, x = -1 + \sqrt{2}, x = -1 - \sqrt{2}$
- b) $x = -1 + \sqrt{2}, x = -1 - \sqrt{2}$
- c) $x = 1, x = 1 + \sqrt{2}, x = 1 - \sqrt{2}$
- d) $x = 1 + \sqrt{2}, x = 1 - \sqrt{2}$
- e) There is no solution.

8. Solve the inequality: $|7 - 3x| < -21$.

- a) $\left(-\frac{14}{3}, \frac{28}{3}\right)$
- b) $(-\infty, \infty)$
- c) $\left(-\frac{28}{3}, \frac{14}{3}\right)$
- d) $\left(-\infty, -\frac{14}{3}\right) \cup \left(\frac{28}{3}, \infty\right)$
- e) There is no solution.

9. Solve the inequality: $10x^2 - 25x > 0$.

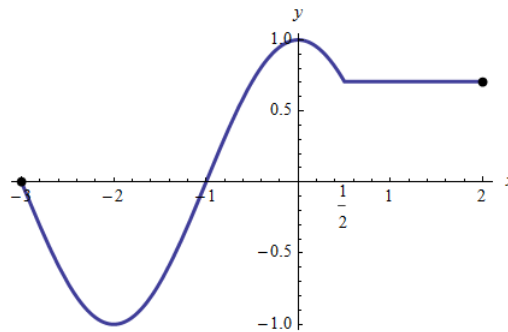
- a) $(-\infty, 0) \cup (5, \infty)$
- b) $\left(0, \frac{5}{2}\right)$
- c) $(-\infty, 0) \cup \left(\frac{5}{2}, \infty\right)$
- d) $(-\infty, \infty)$
- e) $\left(\frac{5}{2}, \infty\right)$

10. Solve the inequality: $\frac{x^2 - 35}{x + 7} \geq x$.

- a) $[-7, -5]$
- b) $(-\infty, -7) \cup (-5, \infty)$
- c) $(-7, -5)$
- d) $(-7, -5]$
- e) $(-\infty, -7) \cup [-5, \infty)$

11. Given $f(x) = 3x^2 - 2$, evaluate the difference quotient $\frac{f(x+h) - f(x)}{h}$.

- a) $6x + 3h$
- b) 6
- c) $6x$
- d) 1
- e) $6x + 3h - \frac{4}{h}$



12. Find the domain of the function $f(x) = \sqrt{x^2 - 1}$.

- a) $(-\infty, -1] \cup [1, \infty)$
- b) $(-\infty, 1)$
- c) $(-\infty, -1) \cup (1, \infty)$
- d) $(1, \infty)$
- e) $(-\infty, \infty)$

On which interval(s) is the function increasing?

- a) $(-\infty, -3)$
- b) $(\frac{1}{2}, 2)$
- c) $(-3, -2) \cup (0, \frac{1}{2})$
- d) $(-2, 0)$
- e) $(2, \infty)$

13. Which graph represents an even function?

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

- b)
- d)

15. Which of the following functions has a relative maximum ?

- a) $f(x) = x$
- b) $g(x) = x^2$
- c) $h(x) = x^3$
- d) $k(x) = -4$
- e) $l(x) = -|x|$

16. Suppose

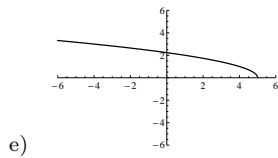
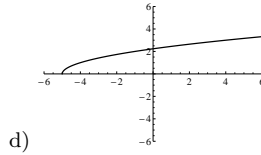
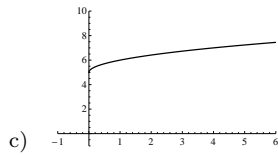
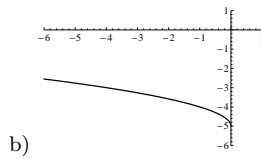
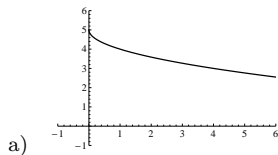
$$f(x) = \begin{cases} |x| & \text{if } x \leq 0; \\ \frac{1}{x} & \text{if } x > 0. \end{cases}$$

Which of the following is FALSE?

- a) $f(-1) = f(1)$
- b) $f(2) = \frac{1}{2}$
- c) The domain of $f(x)$ is $(-\infty, \infty)$.
- d) The range of $f(x)$ is $(-\infty, \infty)$.
- e) The y -intercept of the graph of f is $y = 0$.

17. Which of the following is the graph of $f(x) = \sqrt{-x-5}$?

EXAM I- SAMPLE A



1. D
2. E
3. C
4. A
5. D
6. B
7. A
8. E
9. C
10. D
11. A
12. A
13. C
14. D
15. E
16. D
17. E
18. C
19. B
20. D

18. Suppose the point $(3, 3)$ lies on the graph of $f(x)$. The point $(3, 3)$ will shift to which point on the graph of $f(x - 5) + 6$?

- a) $(5, 6)$
- b) $(-2, 9)$
- c) $(8, 9)$
- d) $(9, 8)$
- e) $(9, -2)$

19. If $f(x) = \sqrt{x+2}$ and $g(x) = 2x + 9$, find $(f \circ g)(0)$.

- a) 3
- b) $\sqrt{11}$
- c) $\sqrt{2} + 9$
- d) 0
- e) $2\sqrt{2} + 9$

20. If $f(x) = x^2 - 12$ and $g(x) = \frac{1}{x+3}$, find the domain of $(f \circ g)(x)$.

- a) $(-\infty, -3) \cup (-3, 3) \cup (3, \infty)$
- b) $(-\infty, -12) \cup (-12, \infty)$
- c) $(-\infty, \infty)$
- d) $(-\infty, -3) \cup (-3, \infty)$
- e) $(-\infty, -3) \cup (3, \infty)$