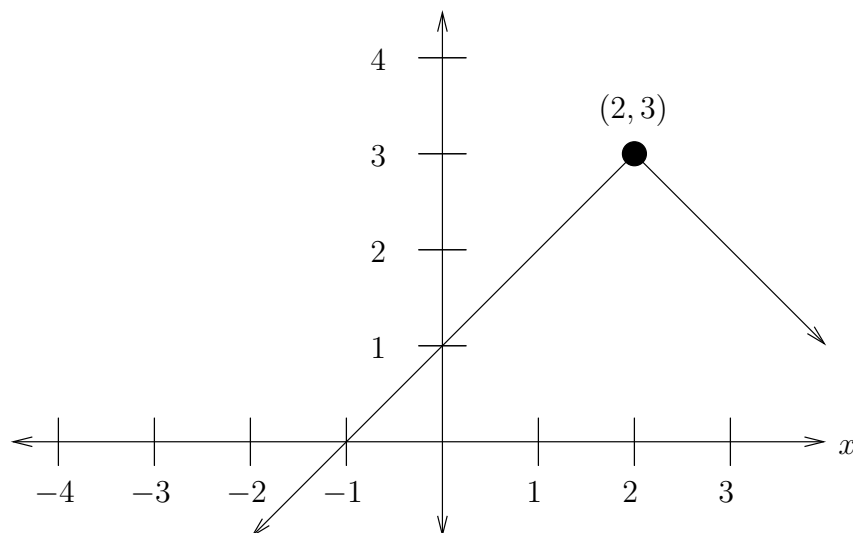


Sample Test 2

- Solve the equation $\sqrt{3x+1} = 1 + \sqrt{x+4}$. What describes your solution set best?
(a) One positive solution (b) One negative solution (c) No solution (d) Two solutions
- Find the distance between $(7, -1)$ and $(3, -3)$.
(a) 12 (b) 2 (c) $2\sqrt{5}$ (d) $12\sqrt{3}$
- Find the midpoint of the line segment whose endpoints are $(7, 4)$ and $(1, 7)$.
(a) $(8, 11)$ (b) $6, -3$ (c) $(\frac{11}{2}, 4)$ (d) $(4, \frac{11}{2})$
- If $(-5, 9)$ is the endpoint of a line segment, and $(-3, 8)$ is its midpoint, find the other endpoint.
(a) $(-9, 11)$ (b) $(-7, 13)$ (c) $(-1, 10)$ (d) $(-1, 7)$
- Find the equation of the circle, centered at $(4, -6)$ and of radius 5.
(a) $(x - 6)^2 + (y + 4)^2 = 5$ (b) $(x - 4)^2 + (y + 6)^2 = 25$ (c) $(x - 4)^2 + (y + 6)^2 = 5$
(d) $(x - 6)^2 + (y + 4)^2 = 25$
- Find the center and radius of the circle given by $x^2 - 8x + y^2 - 4y = 61$.
(a) $(4, 2), r = 9$ (b) $(-4, -2), r = 81$ (c) $(4, 2), r = 81$ (d) $(-4, -2), r = 9$
- Which of the following lines passes through $(3, 2)$ and has slope $-\frac{3}{7}$?
(a) $7x + 3y = -23$ (b) $3x - 7y = 23$ (c) $3x + 7y = 23$ (d) $7x + 3y = 23$
- Find the slope of the line passing through $(-8, -5)$ and $(1, 9)$.
(a) Undefined (b) 4 (c) $\frac{14}{5}$ (d) $\frac{14}{9}$

9. Write the equation $5x - 3y = 4$ in slope-intercept form.
(a) $y = \frac{5}{3}x - \frac{4}{3}$ (b) $y = \frac{3}{5}x + \frac{4}{5}$ (c) $y = \frac{5}{3}x + \frac{4}{3}$ (d) $y = 5x - 4$
10. Write the equation of the line passing through $(-7, -10)$, perpendicular to $-7x - 8y = 73$
(a) $-8x - 7y = 73$ (b) $-7x - 8y = -14$ (c) $-8x + 7y = -14$ (d) $-8x - 7y = -14$
11. Which of the following relations is *not* a function?
(a) $\{(1, 1), (2, 1), (3, 1)\}$ (b) $\{(1, 1), (2, 2), (3, 3)\}$ (c) $\{(1, 3), (1, 2), (3, 3)\}$
(d) $\{(1, 1), (2, 1), (3, 3)\}$
12. Find the domain of $f(x) = x^2 + \sqrt{x - 7}$
(a) $x < 7$ (b) $x > 7$ (c) $[7, \infty)$ (d) $[-7, \infty)$
13. Find the domain of $\frac{1}{(x - 2)\sqrt{x + 1}}$.
(a) All real numbers (b) empty (c) $x \neq 2$ and $x \geq -1$ (d) $x \neq 2$ and $x > -1$.
14. Find the average rate of change of $f(x) = x^2 + 5x$ between $x = 6$ and $x = 9$.
(a) $\frac{20}{3}$ (b) 42 (c) 20 (d) 14
15. Is $f(x) = \frac{x^3 + x}{x^2}$ even or odd?
(a) Neither (b) Even (c) Odd (d) Both even and odd
16. How do you obtain the graph of $f(x) = \sqrt{x - 1}$ from the graph of $g(x) = \sqrt{x}$?
(a) Shift one unit up. (b) Shift one unit down. (c) Shift one unit to the right. (d) Shift one unit to the left.

17. Find all intervals on which the function is increasing



- (a) $(2, -\infty)$ (b) $(2, \infty)$ (c) $(-\infty, 2)$ (d) $(\infty, 2)$

18. What is the formula for the function whose graph is shown in question 17?

- (a) $f(x) = -|x - 2| + 3$ (b) $f(x) = |x - 2| + 3$ (c) $f(x) = -|x + 2| + 3$ (d) $f(x) = |x + 2| + 3$

19. Compare the graph of $f(x) = -2x^2$ to the graph of $g(x) = x^2$. Does it open upward or downward, is it wider, or narrower than the graph of $g(x) = x^2$?

- (a) Upward, wider (b) Upward, narrower (c) Downward, wider (d) Downward, narrower

20. Write a general formula saying the following: y varies directly with x ; $y = 5$ when $x = 19$.

- (a) $y = \frac{5}{19}x$ (b) $y = \frac{19}{5}x$ (c) $y = \frac{19}{5}x$ (d) $y = \frac{5}{19x}$

21. Write a general formula saying the following: y varies inversely with the square of x ; $y = 3$ when $x = 2$.

- (a) $y = \frac{6}{x^2}$ (b) $y = 6x^2$ (c) $y = \frac{12}{x^2}$ (d) $y = \frac{3}{4}x^2$

22. The period of vibration P of a pendulum varies directly with the square root of its length L . If P is 0.75 seconds when L is 9 inches, what is P when L is 100 inches?

- (a) 40 seconds (b) 400 seconds (c) 2.5 seconds (d) 25 seconds

23. Consider the piecewise defined function

$$f(x) = \begin{cases} x & \text{if } x < 0, \\ \sqrt{x+2} & \text{if } 0 \leq x < 1, \\ x+2 & \text{if } x > 1. \end{cases}$$

Evaluate $f(2) - f(0)$.

- (a) 2 (b) $\sqrt{2}$ (c) 4 (d) $4 - \sqrt{2}$

Solution key:

1. a ($x = 5$, the root $x = 0$ is extraneous)
2. c
3. d
4. d
5. b
6. a
7. c
8. d
9. a
10. c
11. c
12. c
13. d
14. c
15. c
16. c
17. c
18. a
19. d
20. a
21. c
22. c $P = 0.25 \cdot \sqrt{L}$
23. d