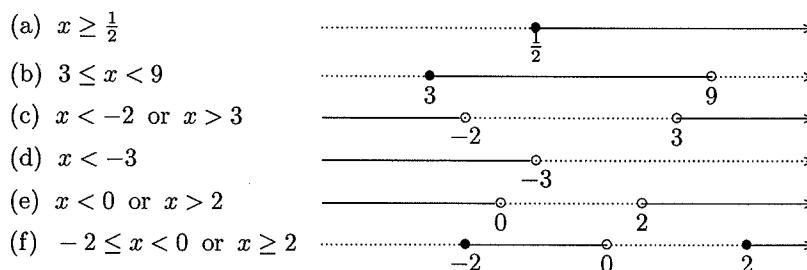


7.5 Answers to Exercises

Answers for Section 7.1 Exercises

Answer to Problem 1.



Answer to Problem 2.

- (a) $[1, 5)$ (b) $(-\infty, 2]$ (c) $(-\infty, -3) \cup (0, \infty)$ (d) $(-\infty, -2)$ (e) $[1]$

Answer to Problem 3.

- (a) $x < -\frac{2}{7}$ (b) $-2 < x < 2$ (c) $x < -2$ or $x > 2$
 (d) $x < -2$ (e) $-2 < x \leq 3$ (f) $x < 1$

Answer to Problem 4.

- (a) $(-\infty, -3] \cup [-1, \infty)$ (b) $[-\sqrt{2}, \sqrt{2}]$

Answer to Problem 5.

$$1 \leq n \leq 29$$

Answer to Problem 6.

We don't know the sign of $(3x + 8)$ so we can't be sure which inequality sign is valid.

Answers for Section 7.2 Exercises

Answer to Problem 1.

Answers will vary.

Answer to Problem 2.

Answers will vary.

Answer to Problem 3.

- (a) $x \geq \frac{4}{3}$ (b) $x \leq \frac{4}{3}$.

Answer to Problem 4.

$$|x - 5| = \begin{cases} x - 5 & \text{if } x \geq 5 \\ -x + 5 & \text{if } x < 5 \end{cases} \quad (x + 5) \text{ is not always non-negative.}$$

Answer to Problem 5.

- (a) $1, -\frac{1}{3}$ (b) $\frac{1}{2}$ (c) $-2, 7$ (d) no solution (e) $-1, 10$
 (f) $-\frac{1}{5}, \frac{5}{3}$ (g) $-5, 3$ (h) $-\frac{7}{3}, 9$ (i) $-3, 3$

Answer to Problem 6.

$$(a) \frac{|x+2|}{x+2} = \begin{cases} -1 & \text{if } x < -2 \\ 1 & \text{if } x > -2 \end{cases} \quad (b) \frac{|x^2-4|}{|3x+6|} = \frac{|x-2|}{3} \text{ if } x \neq -2$$

Answer to Problem 7.

- (a) $|x-3|=12$ (b) $|x-7|=4$ (c) $|2x+4|=1$ (d) $|x|=6$

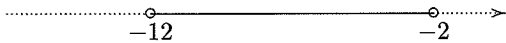
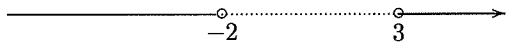
Answer to Problem 8.

Graphs not shown. (b) even

Answers for Section 7.3 Exercises**Answer to Problem 1.**

- (a) $|x-4| < 6$ (b) $|y+1| \geq 8$ (c) $|z| \leq 5$ (d) $|x| \leq 3$
 (e) $|x-3| < 7$ (f) $|x| > 4$ (g) $|x-6| > 4$

Answer to Problem 2.

- (a) $-12 < x < -2$ 
 (b) $x < -2$ or $x > 3$ 
 (c) $0 \leq x \leq 3$ (d) $x \leq \frac{2}{5}$ or $x \geq \frac{6}{5}$ (e) no solutions
 (f) $x < -\frac{1}{2}$ (g) $x < -7$ or $x > 3$ (h) $\frac{3}{2} < x < 2$
 (i) $x \leq -\frac{11}{2}$ or $x \geq -\frac{3}{2}$ (j) $x \leq 0$ or $x \geq 3$ (k) $x < -\frac{7}{2}$ or $x > \frac{5}{2}$

Answer to Problem 3.

$$|x^2 - 4x - 21| = \begin{cases} x^2 - 4x - 21 & \text{if } x \leq -3 \\ -x^2 + 4x + 21 & \text{if } -3 < x < 7 \\ x^2 - 4x - 21 & \text{if } x \geq 7 \end{cases}$$

Answer to Problem 4.

$$1 < x < 3$$