Chapter 7 Absolute Value and Reciprocal Functions

Section 7.1 Absolute Value

Section 7.1   Page 363   Question 1

a) $|9| = 9$

b) $|0| = 0$

c) $|-7| = 7$

d) $|-4.728| = 4.728$

e) $|6.25| = 6.25$

f) $\left|-5\dfrac{1}{2}\right| = 5\dfrac{1}{2}$

Section 7.1   Page 363   Question 2

First, evaluate each number and express it in decimal form.

$|0.8| = 0.8 \qquad 1.1 \qquad |-2| = 2, \quad \left|\dfrac{3}{5}\right| = 0.6 \qquad -0.4 \qquad \left|-1\dfrac{1}{4}\right| = 1.25 \qquad -0.8$

The numbers from least to greatest are -0.8, -0.4, $\left|\dfrac{3}{5}\right|$, $|0.8|$, 1.1, $\left|-1\dfrac{1}{4}\right|$, and $|-2|$.

Section 7.1   Page 363   Question 3

First, evaluate each number and express it in decimal form.

$-2.4 \qquad |1.3| = 1.3 \qquad \left|-\dfrac{7}{5}\right| = 1.4 \qquad -1.9 \qquad |-0.6| = 0.6 \qquad \left|1\dfrac{1}{10}\right| = 1.1 \qquad 2.2$

The numbers from greatest to least are 2.2, $\left|-\dfrac{7}{5}\right|$, $|1.3|$, $\left|1\dfrac{1}{10}\right|$, $|-0.6|$, -1.9, and -2.4.

Section 7.1   Page 363   Question 4

a) $|8 - 15| = |-7|$
$\qquad\quad = 7$

b) $|3| - |-8| = 3 - 8$
$\qquad\qquad = -5$

c) $|7 - (-3)| = |7 + 3|$
$\qquad\qquad = |10|$
$\qquad\qquad = 10$

d) $|2 - 5(3)| = |2 - 15|$
$\qquad\qquad = |-13|$
$\qquad\qquad = 13$

Section 7.1   Page 363   Question 5

a) distance AC:
$$|2.1 - (-6.7)| = |2.1 + 6.7|$$
$$= |8.8|$$
$$= 8.8$$
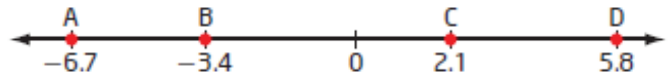
A number line showing points A at −6.7, B at −3.4, 0, C at 2.1, and D at 5.8.

b) distance BD:
$$|5.8 - (-3.4)| = |5.8 + 3.4|$$
$$= |9.2|$$
$$= 9.2$$

c) distance CB:
$$|-3.4 - 2.1| = |-5.5|$$
$$= 5.5$$

d) distance DA:
$$|-6.7 - 5.8| = |-12.5|$$
$$= 12.5$$

Section 7.1   Page 363   Question 6

a) $2(|-6 - (-11)|) = 2(|-6 + 11|)$
$$= 2|5|$$
$$= 2(5)$$
$$= 10$$

b) $|-9.5| - |12.3| = 9.5 - 12.3$
$$= -2.8$$

c) $3\left(\left|\dfrac{1}{2}\right|\right) + 5\left(\left|-\dfrac{3}{4}\right|\right) = 3\left(\dfrac{1}{2}\right) + 5\left(\dfrac{3}{4}\right)$
$$= \dfrac{3}{2} + \dfrac{15}{4}$$
$$= \dfrac{6}{4} + \dfrac{15}{4}$$
$$= \dfrac{21}{4}$$

d) $|3(-2)^2 + 5(-2) + 7| = |12 - 10 + 7|$
$$= |9|$$
$$= 9$$

e) $|-4 + 13| + |6 - (-9)| - |8 - 17| + |-2| = |9| + |15| - |-9| + 2$
$$= 9 + 15 - 9 + 2$$
$$= 17$$

Section 7.1   Page 363   Question 7

Examples:

a) $|8 - 3| = |5|$
$$= 5$$

b) $|12 - (-8)| = |20|$
$$= 20$$

c) $|2 - 9| = |-7|$
$$= 7$$

d) $|-7 - 15| = |-22|$
$$= 22$$

e) $|a - b|$

f) $|m - n|$