Intermediate Algebra Questions (worksheet 5)

Q1. Choose the correct answer.

(a) Evaluate the expression: \(-10 - 4 \times 12 + 5\)

A. 5        B. 0        C. \(-2\)        D. \(-6\)

(b) Simplify the following expression: \((-x^{22})^2 \cdot x^{-22}\)

A. 5        B. 0        C. \(-2\)        D. \(-6\)

(c) The distance between the numbers 6 and \(-6\) on the number line is

A. \(x > 2\)        B. \(x > -2\)        C. \(x \geq 2\)        D. \(x \geq -2\)

(d) Which of the equations below is inconsistent?

A. Parallel        B. Perpendicular

C. Neither parallel nor perpendicular        D. none of these

(e) Write \(3.59 \times 10^4\) in standard form.

A. 0        B. 3        C. 1        D. \(-1\)
(f) The set \([-3, 3]\) is the solution set to

A. A function is not a relation       B. Every function is a relation
C. Every relation is a function     D. A relation is not a function

(g) Which of these inequalities has NO solutions?

A. \(2x + 4 > 1\)       B. \(|x| > -5\)       C. \(|x| < -10\)       D. \(-x + 3 \geq 5\)

(h) A system of two linear equations with two variables is independent if it has

A. Two solutions       B. One solution
C. No solutions       D. Many solutions

(i) The lines \(y = (a + 1)x + 3\) and \(y = -3x + 2\) are parallel if \(a =\)

A. \(-4\)       B. \(4\)       C. \(-3\)       D. \(3\)

(j) Which of these points is on the graph of the equation \(2x + 3y = 7\)?

A. \((2, 3)\)       B. \((0, 3)\)       C. \((-1, 3)\)       D. \((3, 0)\)
Q2. Solve the following inequality:

\[
\frac{2x - 1}{-3} < -5
\]

Q3. A rectangular field has a perimeter of 104 meters. The length of the field is 12 meters more than its width. Find the length and the width of this field. (6 pts)
Q4. Solve the following equations:

b. $4|2x + 5| = 12$

c. $(2x + 1)^2 = 25$

d. $2x^2 + 9x + 5 = 0$
Q5. Solve the following inequality and write the answer in interval notation.

\[ |2x + 1| + 3 \geq 7 \]

Q6. Solve the following system of equations

\[ 2x + 3y = 5 \]
\[ 3x + 7y = 15 \]
Q7. \(3x + 4y = 12\) is the equation of line L.

a. Find the \(x\) intercept of line L.

b. Find the \(y\) intercept of line L.

c. Find the slope of line L.

d. Graph line L.
Q8. Consider the relation \( A = \{ (2, -1), (-1, 0), (-2, 3), (-3, -2) \} \).

a. Graph the ordered pairs in \( A \).

\[ \includegraphics[width=0.5\textwidth]{graph.png} \]

b. Does \( A \) represent a function? Explain your answer.

c. Find the domain of \( A \).

d. Find the range of \( A \).

e. Find all possible values of \( x \) so that the relation \( B = \{ (2, -1), (-1, 0), (-2, 3), (x, -2) \} \) is not a function.
Q9. Consider the line segment $PQ$ with endpoints $P(-2, 1)$ and $Q(4, 5)$.

   a. Find the length of segment $PQ$.

   b. Find the midpoint of segment $PQ$.

   c. Find the slope of the line through the points $P$ and $Q$.

   d. Find the equation of the line that passes through the point $(1, 1)$ and is perpendicular to the line through $P$ and $Q$. 