Intermediate Algebra Questions (worksheet 6)

Q2. Answer by TRUE or FALSE.

(a) (............) 1 is the multiplicative identity.

(b) (............) The additive inverse of -4 is $\frac{1}{4}$.

(c) (............) The equation $|x - 1| = -1$ has two solutions.

(d) (............) $2^0 = 1$.

(e) (............) $(-4)^2 = -4^2$.

(f) (............) The equation $x^2 = -4$ has no solutions.

(g) (............) $| - | - 2|| = 2$.

(h) (............) $\sqrt{-16} = -4$.

(i) (............) $\frac{10}{0}$ is undefined.
Q3. Evaluate the following expressions:

a. \( |67 - 12(7 - 9)| - |23 - 43| \)

b. \( 12 + \sqrt{-9 + 15 \times 5 \div 3} \)

c. \( -5^2 - [7 - 3(8 - 2^3)]^2 \)
Q4. Simplify the following expressions.

a. $3x(-x + 1) - 5(x - 3) + 8x^2$

b. $(10x^6)^3(x + 2y)^0$

c. $\frac{54(x^7 y^3)^2}{(-3x^5 y^{-4})^3}$
Q5. Solve the following equations.

a. \[ 5 + 3(x - 1) = 3x - 2(x - 3) \]

b. \[ \frac{2x}{3} = -6 - \frac{x - 4}{5} \]

c. \[ |3x - 8| - 3 = 4 \]
Q6. Solve the following inequalities and write the solution set in interval notation and graph it.

a. $12x - 2 < 7x - 17$.

b. $9 < 3 - 2(x - 5) \leq 21$. 

[Graph showing solution intervals for the inequalities.]
Q7.

a. Find $A$ so that $2x + 6 = 2(x + A)$ is an identity.

b. Find $B$ so that $-3x + 10 = (B + 1)x + 13$ is an inconsistent equation (an equation with no solutions).

Q8. The perimeter of a rectangular field is 120 meters. Its length is 10 meters more than its width.

Find the length and width of this rectangle?
Q9. Going for a long trip, Joshwa drove for 3 hours and had lunch. After lunch he drove for 4 more hours at a speed that is 10 km/h more than before lunch. The total trip was 600 km.

a. What was his speed before lunch?

b. What distance did he drive after lunch?