

Name: _____

Show work needed to justify your answer.

Date: _____

HW: # 11: Math IBSL - Standard 11 - Solve Quadratic Equations by Graphing

5 points

1. Solve by factorization:

a $x^2 - 4x + 3 = 0$

$$(x-3)(x-1) = 0$$

$$\boxed{x=3} \quad \boxed{x=1}$$

b $3x^2 + 5x - 12 = 0$

$$(3x-4)(x+3) = 0$$

$$\boxed{x = \frac{4}{3}} \quad \boxed{x = -3}$$

2. Solve by factorization:

a $x^2 - x - 20 = 2x + 8$

$$x^2 - 3x - 28 = 0$$

$$(x-7)(x+4) = 0$$

$$\boxed{x=7} \quad \boxed{x=-4}$$

b $2x^2 - 3x - 8 = -x^2 + 2x$

$$3x^2 - 5x - 8 = 0$$

$$(3x-8)(x+1) = 0$$

$$\boxed{x = \frac{8}{3}} \quad \boxed{x = -1}$$

d $3x(x+5) = -(x+5)$

$$3x^2 + 15x = -x - 5$$

$$3x^2 + 16x + 5 = 0$$

$$(3x+1)(x+5) = 0$$

$$\boxed{x = -\frac{1}{3}} \quad \boxed{x = -5}$$

f $x(x+8) = \left(\frac{-15}{x}\right) \frac{x}{1}$

$$x^2 + 8x = -15$$

$$x^2 + 8x + 15 = 0$$

$$(x+5)(x+3) = 0$$

$$\boxed{x = -5} \quad \boxed{x = -3}$$

3. Let $f(x) = x^2 - 2$, $g(x) = 2x + 1$ and $h(x) = x^2 + 5x + 3$.a Show that $(f \circ g)(x) = 4x^2 + 4x - 1$.b Find the values of x for which

$$(f \circ g)(x) = h(x).$$

a)
$$\begin{aligned} f(g(x)) &= f(2x+1) \\ &= (2x+1)^2 - 2 \\ &= 4x^2 + 4x + 1 - 2 \end{aligned}$$

$$\boxed{f(g(x)) = 4x^2 + 4x - 1}$$

(b)
$$\begin{aligned} 4x^2 + 4x - 1 &= x^2 + 5x + 3 \\ 3x^2 - 1x - 4 &= 0 \\ (3x-4)(x+1) &= 0 \end{aligned}$$

$$\boxed{x = \frac{4}{3}} \quad \boxed{x = -1}$$