

Name: \_\_\_\_\_

Show work needed to justify your answer.

Date: \_\_\_\_\_

HW: # 12: Math IBSL - Standard 12 - Quadratic Formula and the Discriminant

5 points

1 Use the quadratic formula to find the roots of each equation:

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

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

$$a) x = \frac{-4 \pm \sqrt{16 - 4(1)(-2)}}{2(1)}$$

$$x = \frac{-4 \pm \sqrt{16+8}}{2}$$

$$x = \frac{-4 \pm \sqrt{24}}{2} \rightarrow \sqrt{4}\sqrt{6}$$

$$x = \frac{-4 \pm 2\sqrt{6}}{2}$$

$$x = -2 \pm \sqrt{6}$$

$$b) x = \frac{8 \pm \sqrt{64 - 4(3)(5)}}{6}$$

$$x = \frac{8 \pm \sqrt{64 - 60}}{6}$$

$$x = \frac{8 \pm \sqrt{4}}{6}$$

$$x = \frac{8 \pm 2}{6} \rightarrow \begin{array}{l} \frac{8+2}{6} \\ \frac{8-2}{6} \end{array}$$

$$x = \frac{5}{3} \text{ OR } x = 1$$

2 Solve each equation using the quadratic formula:

e  $-2(x-3)^2 = 2x-9$

$$-2(x^2 - 6x + 9) = 2x - 9$$

$$-2x^2 + 12x - 18 = 2x - 9$$

$$-2x^2 + 10x - 9 = 0$$

$$x = \frac{-10 \pm \sqrt{100 - 4(-2)(-9)}}{-4}$$

$$x = \frac{-10 \pm \sqrt{100 - 72}}{-4}$$

$$x = \frac{-10 \pm \sqrt{28}}{-4} \quad \sqrt{28} = \sqrt{4}\sqrt{7}$$

$$x = \frac{-10 \pm 2\sqrt{7}}{-4}$$

$$x = \frac{5}{2} \pm \frac{\sqrt{7}}{2}$$

g  $\begin{array}{cc} x+3 & 2x \\ x-1 & x+1 \end{array}$

$$(x+3)(x+1) = 2x(x-1)$$

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

$$0 = x^2 - 6x - 3$$

$$x = \frac{6 \pm \sqrt{36 - 4(1)(-3)}}{2}$$

$$x = \frac{6 \pm \sqrt{36 + 12}}{2}$$

$$x = \frac{6 \pm \sqrt{48}}{2} \quad \sqrt{48} = \sqrt{16}\sqrt{3}$$

$$x = \frac{6 \pm 4\sqrt{3}}{2}$$

$$x = 3 \pm 2\sqrt{3}$$

