

Name: _____

Show work needed to justify your answer.

Date: _____

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

5 points

1. For each equation find the value(s) of k such that the equation has two distinct real roots.

a $x^2 + 3x + k = 0$

$$b^2 - 4ac > 0$$

$$3^2 - 4(1)k > 0$$

$$9 - 4k > 0$$

$$-4k > -9$$

$$k < \frac{9}{4}$$

b $kx^2 + 20x + 5 = 0$

$$b^2 - 4ac > 0$$

$$20^2 - 4k(5) > 0$$

$$400 - 20k > 0$$

$$-20k > -400$$

$$k < 20$$

2. For each equation, find the value(s) of p such that the equation has two equal real roots.

a $x^2 + 5x + p = 0$

$$b^2 - 4ac = 0$$

$$25 - 4(1)p = 0$$

$$-4p = -25$$

$$p = \frac{25}{4}$$

d $x^2 - 3px - 2p = 0$

$$b^2 - 4ac = 0$$

$$(-3p)^2 - 4(1)(-2p) = 0$$

$$9p^2 + 8p = 0$$

$$p(9p + 8) = 0$$

$$p = 0 \quad p = -\frac{8}{9}$$

3. For each equation, find the value(s) of m such that the equation has no real roots.

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

$$b^2 - 4ac < 0$$

$$4 - 4(1)(m) < 0$$

$$4 - 4m < 0$$

$$-4m < -4$$

$$m > 1$$

b $3mx^2 - 6x + 1 = 0$

$$b^2 - 4ac < 0$$

$$36 - 4(3m)(1) < 0$$

$$36 - 12m < 0$$

$$-12m < -36$$

$$m > 3$$

