

$$\frac{40}{40} = 100$$

Math 0099
University of North Georgia
Summer 2015
Exam #3

Name: Key Date: July 27, 2015

Use the square root property to solve the equation.

1) $x^2 - 19 = 0$

$$x^2 = 19$$

$$x = \pm \sqrt{19}$$

2) $5x^2 = 55$

$$x^2 = 11$$

$$x = \pm \sqrt{11}$$

3) $(3x + 2)^2 = 6$

$$3x + 2 = \pm \sqrt{6}$$

$$3x = -2 \pm \sqrt{6}$$

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

$$= \frac{-2 \pm \sqrt{6}}{3}$$

Add the proper constant to each binomial so that the resulting trinomial is a perfect square trinomial. Then factor the trinomial.

$$4) x^2 + 4x + \underline{4} = (x + 2)^2$$

a) $4 \cdot \frac{1}{2} = 2$

b) $(2)^2 = 4$

Solve the equation by completing the square.

$$5) x^2 + 16x + 53 = 0$$

$$x^2 + 16x = -53$$

$$\textcircled{a} 16 \cdot \frac{1}{2} = 8$$

$$\textcircled{b} (8)^2 = 64$$

$$x^2 + 16x + 64 = -53 + 64$$

$$(x + 8)^2 = 11$$

$$x + 8 = \pm \sqrt{11}$$

$$x = -8 \pm \sqrt{11}$$

$$6) 8x^2 - 5x + 1 = 0$$

$$x^2 - \frac{5}{8}x = -\frac{1}{8}$$

$$\textcircled{a} \left(-\frac{5}{8}\right) \cdot \frac{1}{2} = -\frac{5}{16}$$

$$\textcircled{b} \left(-\frac{5}{16}\right)^2 = \frac{25}{256}$$

$$x^2 - \frac{5}{8}x + \frac{25}{256} = -\frac{1}{8} + \frac{25}{256} = \frac{-32 + 25}{256} = -\frac{7}{256}$$

$$\left(x - \frac{5}{16}\right)^2 = -\frac{7}{256}$$

$$x - \frac{5}{16} = \pm \frac{i\sqrt{7}}{16}$$

$$x = \frac{5 \pm i\sqrt{7}}{16}$$

Use the quadratic formula to solve the equation.

$$7) x^2 + 17x + 72 = 0 \quad a = 1, \quad b = 17, \quad c = 72$$

$$b^2 - 4ac = (17)^2 - 4(1)(72)$$

$$= 289 - 288$$

$$= 1 \rightarrow 2 \text{ Real}$$

$$x = \frac{-17 \pm \sqrt{(17)^2 - 4(1)(72)}}{2(1)}$$

$$= \frac{-17 \pm 1}{2}$$

$$\textcircled{1} x = \frac{-17 + 1}{2} = -\frac{16}{2} = -8$$

$$\textcircled{2} x = \frac{-17 - 1}{2} = -\frac{18}{2} = -9$$

$$8) 7x^2 + 10x + 2 = 0 \quad a = 7, \quad b = 10, \quad c = 2; \quad b^2 - 4ac = (10)^2 - 4(7)(2)$$

$$= 100 - 28(2)$$

$$= 100 - 56$$

$$= 44 \quad 2 \text{ real}$$

$$x = \frac{-10 \pm \sqrt{44}}{2(7)}$$

$$= \frac{-10 \pm \sqrt{44}}{14}$$

$$= \frac{-10 \pm 2\sqrt{11}}{14}$$

$$x = \frac{-10}{14} \pm \frac{2\sqrt{11}}{14}$$

$$= -\frac{5}{7} \pm \frac{\sqrt{11}}{7}$$

$$= \frac{-5 \pm \sqrt{11}}{7}$$

Use the discriminant to determine the number and type of solutions of the equation.

$$9) x^2 - 5x - 5 = 0 \quad a = 1, \quad b = -5, \quad c = -5$$

$$b^2 - 4(a)(c)$$

$$(-5)^2 - 4(1)(-5)$$

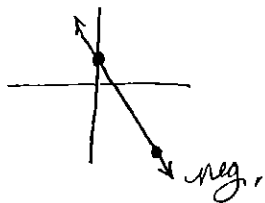
$$25 + 20$$

$$45$$

2 Real Solutions

Find an equation of the line through the pair of points. Write the equation in the form $Ax + By = C$.

10) (9, -8) and (0, 3)



$$m = \frac{3 - (-8)}{0 - 9} = \frac{3 + 8}{-9} = \frac{11}{-9} = -\frac{11}{9}$$

$$y - y_1 = m(x - x_1)$$

$$y - 3 = -\frac{11}{9}(x - 0)$$

$$y - 3 = -\frac{11}{9}x$$

$$9\left(\frac{11}{9}x + y = 3\right)$$

$$11x + 9y = 27$$