

CP Algebra 2  
Unit 7 - Quadratics Review

Name \_\_\_\_\_

Solve using the quadratic formula. Leave your answers in radical form!  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

1.  $x^2 + 3x + 5 = 0$

2.  $6x^2 + 5x - 1 = 0$

$$x = \frac{-3 \pm \sqrt{3^2 - 4(1)(5)}}{2(1)}$$

$$x = \frac{-3 \pm \sqrt{-11}}{2}$$

$$x = \frac{-3 \pm i\sqrt{11}}{2}$$

$\sqrt{4 \cdot 14}$   $i$

3.  $-3x^2 - 7x + 2 = 0$

4.  $-6x^2 + 4x - 3 = 0$

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

$$x = \frac{-2 \pm i\sqrt{14}}{-6}$$

$$x = \frac{-4 \pm \sqrt{-56}}{-12}$$

$$x = \frac{-4 \pm 2i\sqrt{14}}{-12}$$



5.  $x^2 + 45x + 200 = 0$

6.  $4x^2 - 6 = -12x$

Solve by factoring.

7.  $(3x - 2)(x + 5) = 0$

8.  $x^2 - 6x - 16 = 0$

$$3x - 2 = 0 \quad -$$

$$x = \frac{2}{3}$$

$$x + 5 = 0$$

$$x = -5$$

9.  $n^2 = 10n - 21$

10.  $7m^2 = 18m - 8$

Find the value of  $c$  that makes the trinomial a perfect square trinomial. Then factor the trinomial.

11.  $x^2 - 18x + c$

12.  $x^2 - 4x + c$

$$\frac{-18}{2} = -9 = 81$$

Solve by completing the square. Leave your answers in radical form!

13.  $x^2 - 8x - 6 = 0$

$$\frac{-8}{2} = -4^2$$

14.  $x^2 + 4x + 11 = 0$

$$\therefore x^2 - 8x + 16 = 6 + 16$$

$$(x - 4)^2 = \sqrt{22}$$

$$x - 4 = \pm \sqrt{22}$$

$$x = 4 \pm \sqrt{22}$$

$$x^2 + 4x + 4 = -11$$

$$(x + 2)(x + 2)$$

$$\sqrt{(x + 2)^2} = \sqrt{-7}$$

$$x + 2 = \pm i\sqrt{7}$$

$$x = -2 \pm i\sqrt{7}$$

Solve by completing the square. Leave your answers in radical form!

15.  $x^2 - 10x + 29 = 0$

$$x^2 - 10x + 29 = 0$$

$x^2 - 10x + 25 - 25 + 29 = 0$

Write each function in Vertex Form. Identify the vertex.

16.  $y = x^2 + 18x - 4$        $\frac{18}{2} = 9^2$       17.  $y = x^2 - 6x + 16$

$$y + 85 = x^2 + 18x + 81$$

$$y + 85 = (x + 9)^2$$

$$y = (x + 9)^2 - 85$$

$$(-9, -85)$$

Vertex \_\_\_\_\_

Vertex \_\_\_\_\_

18. A baseball is hit upward with a velocity of 48 feet per second from a starting point of 4 feet high. The equation for the height,  $h$ , at time,  $t$ , seconds after launch is  $h(t) = -16t^2 + 48t + 4$ . How long does it take for the ball to fall to the ground?

$$x = \frac{-48 \pm \sqrt{48^2 - 4(-16)(4)}}{2(-16)}$$

$$x = \frac{-48 \pm \sqrt{2560}}{-32} = \frac{-48 \pm 50.59}{-32} = \frac{-98.59}{-32} = 3.08$$

19. A ball is launched directly upward at a velocity of 39.9m/s. The equation of the ball's height,  $h$ , and time,  $t$  seconds after launch is,  $h(t) = -4.9t^2 + 39.9t$

- a) How many seconds does it take for the ball to reach its maximum height?
- b) What is the maximum height of the ball?

$$a) x = \frac{-b}{2a} = \frac{-39.9}{2(-4.9)} = 4.1 \text{ sec.}$$

$$b) -4.9(4.1)^2 + 39.9(4.1) = 81.2 \text{ m.}$$