

Starter #2

1. Solve by factoring  
 $x^2 + 3x - 40 = 0$                       2.  $x^2 = 7x$

Find the discriminant

3.  $-p^2 - p - 6 = 3$

Solve using the quadratic formula

4.  $9a^2 + 19 = 0$                       5.  $x^2 + 4x + 5 = 0$

Dec 12-7:25 AM

$$x^2 + 3x - 40 = 0$$

$a=1$      $b=3$      $c=-40$

$$(x+8)(x-5)$$

$x = -8$      $x = 5$

~~$\frac{-40}{3} = -5$~~

Dec 12-12:02 PM

②  $x^2 = 7x$

$-7x$      $-7x$

$$x^2 - 7x = 0$$

$a=1$      $b=-7$      $c=0$

$$(x-0)(x-7)$$

$x=0$      $x=7$

~~$\frac{0}{-7} = -7$~~

Dec 12-12:05 PM

③  $-p^2 - p - 6 = 3$

$-3$      $-3$

$$-p^2 - p - 9 = 0$$

$a=-1$      $b=-1$      $c=-9$

$$(-1)^2 - 4(-1)(-9)$$

$b^2 - 4ac$

$$-35$$

2 imaginary

Dec 12-12:07 PM

④  $9a^2 + 19 = 0$

$a=9$      $b=0$      $c=19$

$b^2 - 4ac$

$$(0)^2 - 4(9)(19)$$

$$0 \pm \sqrt{-684}$$

$\frac{0 \pm \sqrt{-684}}{18}$

$\pm \frac{6i\sqrt{19}}{18}$

$\pm \frac{i\sqrt{19}}{3}$

$\frac{i\sqrt{19}}{3}$      $-\frac{i\sqrt{19}}{3}$

$684 \rightarrow 36 \rightarrow 6 \times 6 \rightarrow 3 \times 2 \times 3$

Dec 12-12:09 PM

$$x^2 + 4x + 5$$

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

$$\frac{-4 \pm \sqrt{-4}}{2}$$

$-\frac{4 \pm 2i}{2}$

$-2 \pm i$

$-2+i$      $-2-i$

Dec 12-12:13 PM

Calendar Math

Factor  $a + bi$   $a - bi$

Sum of Squares  $a^2 + b^2$   
 $(a - bi)(a + bi)$

Factor:  $x^2 + 9$   
 $(x + 3i)(x - 3i)$

Dec 5-3:39 PM

Factor:  $x^2 + 25$   
 $(x + 5i)(x - 5i)$

Dec 5-3:39 PM

Factor:  $x^2 + 144$

Factor:  $x^2 + 64$

Dec 5-3:39 PM

Homework 5.4 Questions

Dec 5-3:41 PM

5.5 Completing the Square (F.IF.8)

Completing the square is the process of transforming a quadratic function from standard form  $(ax^2 + bx + c)$  to vertex form  $(a(x - h)^2 + k)$ . By doing this we create a perfect square within our function and we also are given the vertex of the function.

To complete the square:

1. Identify b  $b =$
2. Divide by 2  $\frac{b}{2}$
3. Square  $(\frac{b}{2})^2$

Dec 5-3:39 PM

To solve a quadratic function using completing the square method you can find the vertex.

Find the c value to complete the square:  
 $x^2 - 7x + \underline{\hspace{2cm}}$

Dec 5-4:18 PM

Find the c value to complete the square.

$$n^2 + 16n + \underline{c}$$

$$(n+8)(n+8)$$

$$c = 64$$

$b = 16$

$$\frac{16}{2} = 8$$

$$(8)^2 = 64$$

Dec 5-4:19 PM

$$x^2 + 6x + c$$

$$(x+3)(x+3)$$

$$b = 6$$

$$\frac{6}{2} = 3$$

$$(3)^2 = 9$$

Dec 12-12:25 PM

$$x^2 - 7x + c$$

$$b = -7$$

$$\left(\frac{-7}{2}\right)^2 = \frac{-7}{2} \cdot \frac{-7}{2}$$

$$c = \frac{49}{4}$$

Dec 12-12:27 PM

Solve by completing the square:

$$k^2 + 6k - 58 = 0$$

$$k^2 + 6k + \underline{9} = 58 + \underline{9}$$

$$b = 6$$

$$\frac{6}{2} = 3$$

$$3^2 = 9$$

Dec 5-4:20 PM

①  $x^2 - 12x - 45 = 0$

$$x^2 - 12x = 45$$

$$x^2 - 12x + 36 = 45 + 36$$

$$(x-6)(x-6) = 81$$

$$\sqrt{(x-6)^2} = \sqrt{81}$$

$$x-6 = 9 \quad x-6 = -9$$

$$+6 \quad +6 \quad +6 \quad +6$$

$$x = 15 \quad x = -3$$

Dec 12-12:29 PM

②  $v^2 + 14v = 95$

$$v^2 + 14v + 49 = 95 + 49$$

$$\sqrt{(v+7)^2} = \sqrt{144}$$

$$v+7 = 12 \quad v+7 = -12$$

$$-7 \quad -7 \quad -7 \quad -7$$

$$v = 5 \quad v = -19$$

Dec 12-12:37 PM

$$\textcircled{3} \quad k^2 + 6k + 9 = 58 + 9$$

$$\sqrt{(k+3)^2} = \sqrt{67}$$

$$k = -3 + \sqrt{67}$$

$$k = -3 - \sqrt{67}$$

Dec 12-12:39 PM

$$\textcircled{4} \quad m^2 - 17m + 47 = 0$$

$$m^2 - 17m = -47$$

$$m^2 - 17m + \frac{289}{4} = -47 + \frac{289}{4}$$

$$\left(\frac{17}{2}\right)^2$$

$$\sqrt{\left(m - \frac{17}{2}\right)^2} = \sqrt{\frac{101}{4}}$$

$$m - \frac{17}{2} = \frac{\sqrt{101}}{2}$$

$$+ \frac{17}{2}$$

$$m = \frac{17 + \sqrt{101}}{2}$$

$$m = \frac{17 - \sqrt{101}}{2}$$

Dec 12-12:41 PM

$$\textcircled{5} \quad n^2 + 13n - 30 = 0$$

$$+30 \quad +30$$

$$n^2 + 13n + \frac{169}{4} = 30 + \frac{169}{4}$$

$$\sqrt{\left(n + \frac{13}{2}\right)^2} = \sqrt{\frac{281}{4}}$$

$$n + \frac{13}{2} = \frac{17}{2}$$

$$n + \frac{13}{2} = \frac{17}{2} \quad n + \frac{13}{2} = -\frac{17}{2} - \frac{13}{2}$$

$$- \frac{13}{2} \quad -13 \quad - \frac{30}{2}$$

$$\frac{17-13}{2} \quad \frac{17-13}{2}$$

$$n = 2 \quad n = -15$$

Dec 12-12:49 PM

Convert the following function to vertex form:

$$9a^2 + 13a - 92 = 0$$

Dec 5-4:21 PM