

Starter #1

Solve by factoring

1. $x^2 - 7x - 30 = 0$
 $a=1$ $b=-7$ $c=-30$
 $(x-10)(x+3) = 0$
 $x=10$ $x=-3$

2. $x^2 = -2x$
 $x^2 + 2x = 0$
 $x(x+2) = 0$
 $x=0$ $x+2=0$
 $x=-2$

3. $x^2 = 5x - 4$
 $x^2 - 5x + 4 = 0$
 $a=1$ $b=-5$ $c=4$
 $(x-1)(x-4) = 0$
 $x=1$ $x=4$

Nov 28-10:59 AM

Homework #'s

22) $6x^2 + 5x = -1$
 $6x^2 + 5x + 1 = 0$
 $a=6$ $b=5$ $c=1$
 $(\frac{6x+2}{2})(\frac{6x+3}{3}) = 0$
 $(3x+1)(2x+1) = 0$
 $3x+1=0$ $2x+1=0$
 $3x=-1$ $2x=-1$
 $x=-\frac{1}{3}$ $x=-\frac{1}{2}$

Nov 17-1:54 PM

24) $7x^2 - 4 = -27x$
 $7x^2 + 27x - 4 = 0$
 $(7x+28)(x-1) = 0$
 $(x+4)(7x-1) = 0$
 $x+4=0$ $7x-1=0$
 $x=-4$ $x=\frac{1}{7}$

Nov 30-9:59 AM

29) $x: (3,0), (5,0)$
 $y: (0,-3)$

b) $(4,1)$ max

inc: $(-\infty, 4)$
 dec: $(4, \infty)$

neg: $(-\infty, 3)$
 pos: $(3, 5)$

Nov 30-10:03 AM

5.1 - Solving Quadratics with Square Roots (A.SSE.3)

You can solve for the x-intercepts in a quadratic function, even if you are given the function in vertex form. You just have to remember the rules for solving a square root, that you have **two** solutions, the **positive** and the **negative**.

Nov 18-9:06 AM

Example 1: Find the roots of the function: $3k^2 = -54$

Steps:

- Isolate the term that has a square
- Isolate the square
- Square root

Solving:

$$3k^2 = -54$$

$$k^2 = -18$$

$$k = \pm \sqrt{-18}$$

Simplify break out of jail

$$k = \pm 3i\sqrt{2}$$

$k = 3i\sqrt{2}$
 $k = -3i\sqrt{2}$

Nov 18-9:07 AM

$$\textcircled{1} \sqrt{x^2} = \sqrt{64}$$

$$x = \pm 8$$

$$x = 8 \quad x = -8$$

Nov 30-10:21 AM

$$\textcircled{3} \sqrt{m^2} = \sqrt{52}$$

$$2 \quad 26$$

$$2 \quad 13$$

$$m = \pm 2\sqrt{13}$$

$$m = 2\sqrt{13} \quad m = -2\sqrt{13}$$

Nov 30-10:23 AM

$$\sqrt{-1} = i$$

$$\sqrt{-6}$$

$$\sqrt{6} \cdot \sqrt{-1}$$

$$i\sqrt{6}$$

Nov 30-10:24 AM

When the inside of a square root is negative the solution will have i .

Nov 30-10:25 AM

Ex. 2) $7x^2 - 9 = 439$ Ex. 3) $2(x-4)^2 + 6 = 80$

$$\begin{array}{r} 7x^2 - 9 = 439 \\ +9 \quad +9 \\ \hline 7x^2 = 448 \\ \hline \sqrt{x^2} = \sqrt{64} \\ x = 8 \quad x = -8 \end{array}$$

$$\sqrt{64}$$

$$8 \cdot 8$$

$$-8 \cdot -8$$

Nov 18-9:07 AM

$$\textcircled{18} \begin{array}{r} 2(x-4)^2 + 6 = 80 \\ -6 \quad -6 \\ \hline 2(x-4)^2 = 74 \\ \hline \sqrt{(x-4)^2} = \sqrt{37} \\ x-4 = \pm\sqrt{37} \\ 14 \quad +4 \\ x = 4 + \sqrt{37} \quad x = 4 - \sqrt{37} \end{array}$$

Nov 30-10:34 AM

⑩ $(x-8)^2 - 6 = 50$
 $+6 \quad +6$
 $\sqrt{(x-8)^2} = \sqrt{56}$
 $\begin{matrix} 2 & 28 \\ & 2 & 14 \\ & & 2 & 7 \end{matrix}$
 $x-8 = \pm 2\sqrt{14}$
 $+8 \quad +8$
 $(8+2\sqrt{14}) \quad (8-2\sqrt{14})$

Nov 30-10:41 AM

⑪ $64r^2 - 5 = 20$
 $+5 \quad +5$
 $\frac{64r^2}{64} = \frac{25}{64}$
 $\sqrt{r^2} = \sqrt{\frac{25}{64}}$
 $r = \frac{5}{8} \quad r = -\frac{5}{8}$

Nov 30-10:43 AM

⑦ $v^2 - 9 = -11$
 $+9 \quad +9$
 $\sqrt{v^2} = \sqrt{-6}$
 $\begin{matrix} 2 & 3 \end{matrix}$
 $v = i\sqrt{6} \quad v = -i\sqrt{6}$

Nov 30-10:30 AM

⑩ $3p^2 + 9 = 60$
 $-9 \quad -9$
 $\frac{3p^2}{3} = \frac{51}{3}$
 $\sqrt{p^2} = \sqrt{17}$
 $p = \sqrt{17} \quad p = -\sqrt{17}$


Nov 30-10:32 AM

Ex. 4) $\frac{1}{2}x^2 - 5 = 13$ Ex. 5) $2(3x+2)^2 - 6 = 18$

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⑰ $(3-4i) + (2+3i)$
 2nd $\begin{matrix} \cdot \\ 5-i \end{matrix}$

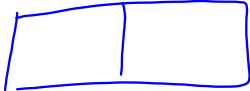
Nov 28-11:03 AM

(23) $\sqrt{25m^2 - 16}$
 $(5m + 4)(5m - 4)$


Nov 30-10:46 AM

$x^2 = -x$
 $+x$ ~~$+x$~~
 $x^2 + x = 0$
 $x(x+1) = 0$
 $x = 0$ $x = -1$

Nov 30-10:48 AM

(23) $2\sqrt{10}$ $-4\sqrt{6} - 5\sqrt{2}$


Nov 30-10:50 AM