

→ true general formula for factoring

Zero Product Property (use to find x -intercepts/roots of a parabola)

Ex.
 $6x^2 + 13x - 5 = 0$
 $(2x+5)(3x-1) = 0$
 $2x+5=0$ $3x-1=0$
 $-5 \quad -5$ $+1 \quad +1$
 $\frac{2x}{2} = \frac{-5}{2}$ $\frac{3x}{3} = \frac{1}{3}$
 $x = -\frac{5}{2}$ $x = \frac{1}{3}$
 $(-\frac{5}{2}, 0)$ $(\frac{1}{3}, 0)$

Ex.
 $3x^2 - 12 = 0$
 $3(x^2 - 4) = 0$
 $3(x+2)(x-2) = 0$
 $x+2=0$ $x-2=0$
 $-2 \quad -2$ $+2 \quad +2$
 $x = -2$ $x = 2$
 $(-2, 0)$ $(2, 0)$

Ex.
 $2x^2 - 6x = 0$ ① set = zero
 $2x(x-3) = 0$ ② Factor.
 $\frac{2x}{2} = \frac{0}{2}$ $x-3=0$ ③ Solve for x .
 $x = 0$ $+3 \quad +3$
 $(0, 0)$ $(3, 0)$

Solving Quadratics in vertex (or graphing) form

Ex. $(x-3)^2 - 12 = 0$
 $+12 \quad +12$
 $\sqrt{(x-3)^2} = \pm \sqrt{12}$
 $x-3 = \pm \sqrt{12}$
 $+3 \quad +3$

- ① Copy the problem
- ② Isolate () or binomial
- ③ Take $\sqrt{\quad}$ both sides
- ④ Solve for x -intercepts (roots, zeros)

Remember that there are 2 answers!

Exact answers

$x = 3 \pm \sqrt{12}$

$x = 3 + \sqrt{12}$ $x = 3 - \sqrt{12}$
 $x \approx 3 + 3.46$ $x \approx 3 - 3.46$
 $x \approx 6.46$ $x \approx -0.46$
 $(6.46, 0)$ $(-0.46, 0)$

approximate answers (round to the nearest hundredth)

roots & intercepts