ex.: $y = x^2 - 3x - 7$

TOOL KIT

Name

8-92

Using the Quadratic Formula

to find roots (x-intercepts) when you can't factor

Step 1 Put in standard form

$0 = ax^2 + bx + c$

$y = x^2 - 3x - 7$

Step 2 Identify/list $a =$ $b =$ $c =$

$a = 1 \quad b = -3 \quad c = -7$

Step 3 Write Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Step 4 Rewrite with ( ) and substitute a, b, c

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-7)}}{2(1)}$$

Step 5 Simplify Show steps!

$$x = \frac{3 \pm \sqrt{9 + 28}}{2}$$

$$x = \frac{3 \pm \sqrt{37}}{2}$$

exact answers $x = \frac{3 + \sqrt{37}}{2}$ $x = \frac{3 - \sqrt{37}}{2}$ **

Step 6 approximate answers w/a calculator

$x \approx \frac{3 + 6.08}{2}$ $x \approx \frac{3 - 6.08}{2}$

$x \approx 4.54$ $x \approx -1.54$

↑ use approximation symbol