

Solving proportions - Examples for p. 7.02

$$1. \frac{x+7}{x+3} = \frac{5}{x}$$

$$x(x+7) = 5(x+3)$$

$$x^2 + 7x = 5x + 15$$

$$x^2 + 2x - 15 = 0$$

$$x^2 + 2x - 15 = 0$$

$$(x+5)(x-3) = 0$$

$$x+5=0 \text{ or } x-3=0$$

$$x = -5 \text{ or } x = 3$$

$$\begin{array}{r} -15 \\ 5 \times 2 \end{array} \begin{array}{r} -3 \\ -3 \end{array}$$

	$x$	$-3$
$x$	$x^2$	$-3x$
$+5$	$5x$	$-15$

$$2. \frac{x+3}{4} = \frac{3}{x}$$

$$x(x+3) = 4(3)$$

$$x^2 + 3x = 12$$

$$x^2 + 3x - 12 = 0$$

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

$$\star x = \frac{-3 \pm \sqrt{(3)^2 - 4(1)(-12)}}{2(1)}$$

$$\star x = \frac{-3 \pm \sqrt{57}}{2}$$

$$x = \left\{ \frac{-3 + \sqrt{57}}{2}, \frac{-3 - \sqrt{57}}{2} \right\}$$