Solve for x.

1. $\frac{ax}{x} + \frac{bx}{x} = c$

$x\frac{(a+b)}{a+b} = \frac{c}{a+b}$

$x = \frac{c}{a+b}$

2. $\sqrt{(x-b)^2} = \sqrt{c}$

$x - b = \pm\sqrt{c}$

$+b \quad +b$

$x = \pm\sqrt{c} + b$

$x = b \pm \sqrt{c}$

Deriving the Quadratic Formula

$$ax^2 + bx + c = 0$$

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

$$\left(\frac{ax^2}{a} + \frac{bx}{a}\right) + c = 0$$

$$a\left(x^2 + \frac{b}{a}x\right) + c = 0$$

$$\left(\frac{b}{2}\right)^2 = \left(\frac{1}{2}\cdot\frac{b}{a}\right)^2 = \left(\frac{b}{2a}\right)^2 = \frac{b^2}{4a^2}$$

$$a\left(x^2 + \frac{b}{a}x + \frac{b^2}{4a^2}\right) + c = \frac{b^2}{4a}$$

$$a\left(x + \frac{b}{2a}\right)^2 + c = \frac{b^2}{4a}$$

$$-c \qquad\qquad -c$$

$$\frac{a}{a}\left(x + \frac{b}{2a}\right)^2 = \frac{1}{a}\left(\frac{b^2}{4a}\right)\left(-c\right)\frac{1}{a}$$

$$\left(x + \frac{b}{2a}\right)^2 = \frac{b^2}{4a^2}\left(-\frac{c}{a}\right)\frac{4a}{4a}$$

$$\sqrt{\left(x + \frac{b}{2a}\right)^2} = \frac{\sqrt{b^2-4ac}}{\sqrt{4a^2}}$$

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

$$-\frac{b}{2a}$$

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