9.1 ⑨ $\frac{3a^2}{3} = \frac{54}{3}$

$\sqrt{a^2} = \pm\sqrt{18}$

$a = \pm\sqrt{9 \cdot 2}$

$a = \pm 3\sqrt{2}$

(23) $\sqrt{(3y-1)^2} = \pm\sqrt{12}$

$3y - 1 = \pm\sqrt{4 \cdot 3}$

$3y - 1 = \pm 2\sqrt{3}$

$+1 \quad +1$

$\frac{3y}{3} = \frac{1 \pm 2\sqrt{3}}{3}$

$y = \frac{1 \pm 2\sqrt{3}}{3}$

$y = \frac{1+2\sqrt{3}}{3}, y = \frac{1-2\sqrt{3}}{3}$

(33) $\sqrt{\left(x-\frac{2}{3}\right)^2} = \pm\sqrt{\frac{25}{9}}$

$$x-\frac{2}{3} = \pm\frac{5}{3}$$

$$+\frac{2}{3} \quad +\frac{2}{3}$$

$$x = \frac{2}{3} \pm \frac{5}{3}$$

$x = \frac{2}{3}+\frac{5}{3}$ or $x = \frac{2}{3}-\frac{5}{3}$

$x = \frac{7}{3}$ $\qquad$ $x = -1$

9.2 (5) $y^2 - 8y + \underline{16} = (x-4)^2$

$b = \frac{-8}{2} = -4$

$b^2 = (-4)^2 = 16$

$(x-b)^2 = x^2 - 2bx + b^2$

(17) $x^2 - \frac{3}{2}x + \frac{9}{16} = \left(x - \frac{3}{4}\right)^2$

$b = \frac{-\frac{3}{2}}{2} = -\frac{3}{2}\left(\frac{1}{2}\right) = \frac{-3}{4}$

$b^2 = \left(-\frac{3}{4}\right)^2 = \frac{9}{16}$

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(35) $4x^2 + 8x - 4 = 0$

$+4 \quad +4$

$\frac{4x^2 + 8x}{4} = \frac{4}{4}$

$x^2 + 2x + 1 = 1 + 1$

$b = \frac{2}{2} = 1$

$b^2 = 1$

$\sqrt{(x+1)^2} = \pm\sqrt{2}$

$x + 1 = \pm\sqrt{2}$

$-1 \quad -1$

$x = -1 \pm \sqrt{2}$

(19) $x^2+4x+4 = 12+4$

$\sqrt{(x+2)^2} = \pm\sqrt{16}$

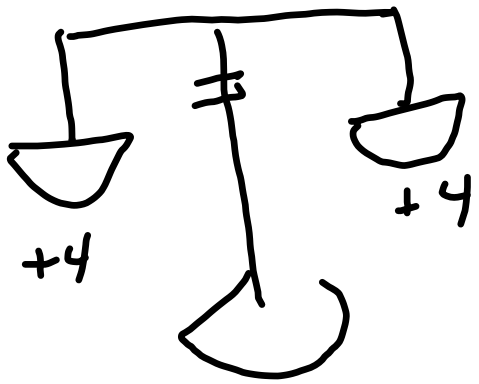
$b = \frac{4}{2} = 2$

$b^2 = 4$

$x+2 = \pm 4$

$-2 \quad -2$

$x = -2 \pm 4$



$x = -2+4$ $\qquad$ $x = -2-4$

$x = 2$ $\qquad$ $x = -6$

(39) $4x^2 + 8x + 1 = 0$

$-1 \quad -1$

must be one → $\frac{4x^2 + 8x}{4} = \frac{-1}{4}$

$b = 1$

$b^2 = 1$

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

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

$x + 1 = \pm\frac{\sqrt{3}}{2}$

$-1 \quad -1$

$x = -\frac{1}{2} \pm \frac{\sqrt{3}}{2}$

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

9.3 Quadratic Formula

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

a = coef of x^2

b = coef of x

c = constant

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

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

(9) $x^2 - 5x + 6 = 0$

$a = 1$
$b = -5$
$c = 6$

$(x-2)(x-3) = 0$

$x = 2$ or $x = 3$

$$x = \frac{5 \pm \sqrt{25 - 4(1)(6)}}{2}$$

$$= \frac{5 \pm \sqrt{25 - 24}}{2}$$

$$= \frac{5 \pm \sqrt{1}}{2}$$

$$x = \frac{5 \pm 1}{2}$$

$x = \frac{5+1}{2}$ $\qquad$ $x = \frac{5-1}{2}$

$= \frac{6}{2}$ $\qquad$ $x = \frac{4}{2}$

$x = 3$ $\qquad$ $x = 2$

(14) $(x-8)(x+7) = 5$

$x^2 - x - 56 = 5$

$-5 \quad -5$

$x^2 - x - 61 = 0$

$a = 1$

$b = -1$

$c = -61$

$$x = \frac{1 \pm \sqrt{1-4(1)(-61)}}{2}$$

$$= \frac{1 \pm \sqrt{1+244}}{2}$$

$$= \frac{1 \pm \sqrt{245}}{2}$$

$$= \frac{1 \pm \sqrt{49 \cdot 5}}{2}$$

$$x = \frac{1 \pm 7\sqrt{5}}{2}$$

$$\begin{array}{r} 49 \\ 5\overline{)245} \\ \underline{20} \\ 45 \\ \underline{45} \\ 0 \end{array}$$