

Problem 4:

$$(x+3)(x+3)$$

$$x^2 + \underbrace{3x + 3x}_{6x} + \underbrace{9}_{(9)}$$

Solve

$$a. \quad x^2 + \underline{6x} - 3 = 0$$

$$\quad \quad \quad +3 \quad +3$$

$$x^2 + 6x + 9 = 3 + 9$$

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

$$\sqrt{(x+3)^2} = \pm \sqrt{12} < 3 \begin{matrix} 2 \\ 3 \end{matrix}$$

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

$$\quad -3 \quad -3$$

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

$$b. \quad x^2 - 12x + 7 = 0$$

$$\quad \quad \quad -7 \quad -7$$

$$x^2 - \underline{12x} + 36 = -7 + 36$$

$$(x-6)^2 = 29$$

$$\sqrt{(x-6)^2} = \pm \sqrt{29}$$

$$x-6 = \pm \sqrt{29}$$

$$\quad +6 \quad +6$$

$$c. \quad x^2 + 12 = 10x = 6 \pm \sqrt{29}$$

$$\underline{-10x - 12} \quad \underline{-10x - 12}$$

$$x^2 - 10x + 25 = -12 + 25$$

$$(x-5)^2 = 13$$

$$\sqrt{(x-5)^2} = \pm \sqrt{13}$$

$$x-5 = \pm \sqrt{13}$$

$$\quad +5 \quad +5$$

$$d. \quad x^2 + 8x = 11$$

$$x^2 + 8x + 16 = 11 + 16$$

$$(x+4)^2 = 27$$

$$\sqrt{(x+4)^2} = \pm \sqrt{27} \left\langle \begin{matrix} 3 \\ 9 \end{matrix} \right\rangle \left\langle \begin{matrix} 3 \\ 3 \end{matrix} \right\rangle$$

$$x+4 = \pm 3\sqrt{3}$$

$$\begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$x = -4 \pm 3\sqrt{3}$$

$$e. \quad 9x^2 - 12x - 2 = 0$$

$$\begin{array}{r} +2 \quad +2 \\ \hline \end{array}$$

$$9x^2 - 12x + 4 = 2 + 4$$

$$(3x-2)^2 = 6 \quad \frac{1}{2}(bx) \div a$$

$$\sqrt{(3x-2)^2} = \pm \sqrt{6}$$

$$3x-2 = \pm \sqrt{6}$$

$$\begin{array}{r} +2 \quad +2 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{2 \pm \sqrt{6}}{3}$$

$$x = \frac{2 \pm \sqrt{6}}{3}$$