

4. (a)

$$x^2 - 4x - 5 = -9$$

$$x^2 - 4x - 5 + 9 = 0$$

$$x^2 - 4x + 4 = 0$$

$$x = \frac{4 \pm \sqrt{16 - 16}}{2}$$

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

(b) $x^2 - 4x - 5 = -5$

$$x^2 - 4x - 5 + 5 = 0$$

$$x^2 - 4x = 0$$

$$x^2 = 4x$$

$$x = 4$$

(c) $f(x) = -9$

$$x^2 - 4x - 5 = -9$$

$x = 2$; From the table.

2.

$$f(x) = x^3 - 2x^2 - 4x + 8$$

(a) From the graph, when $f(x) = 0$, $x = -2$ or 2

$$x = -2, x = 2$$

(b) $x^2 - 2x^2 - 4x + 8 = 8$

$$f(x) = 8$$

When $f(x) = 8$, $x = 0$

$$x = 0$$

(c) $f(x) = 5$

From the graph, when $f(x) = 5$, $x \approx -1.6$, $x \approx 0.6$

$$x \approx 3$$

$$3. \quad (a) \quad 3x + 4 = x - 6$$

$$3x - x + 4 + 6 = 0$$

$$2x + 10 = 0$$

$$2x = -10$$

$$x = -5$$

check

$$3(-5) + 4 = -5 - 6$$

$$-15 + 4 = -5 - 6$$

$$-11 = -11$$

$$(b) \quad 3(x + 2) + 1 = 2x - 1$$

$$3x + 6 + 1 - 2x + 1 = 0$$

$$x + 8 = 0$$

$$x = -8$$

check

$$3(-8 + 2) + 1 = 2(-8) - 1$$

$$3(-6) + 1 = -16 - 1$$

$$-18 + 1 = -17$$

$$-17 = -17$$

$$(c) \quad 6y - 4(y - 5) - 9y = 1$$

$$6y - 4y + 20 - 9y = 1$$

$$-7y + 19 = 0$$

$$7y = 19$$

$$y = \frac{19}{7} \approx 2.714$$

check

$$6\left(\frac{19}{7}\right) - 4\left(\frac{19}{7} - 5\right) - 9\left(\frac{19}{7}\right)$$

$$\frac{114}{7} + \frac{64}{7} - \frac{171}{7} = \frac{7}{7}$$

$$= 1$$

$$1 = 1$$