

$$1) x^2 - 4 = 14 - 3x, \quad x^2 + 3x - 18 = 0, \quad x = -6; 3$$

$$2) S_1 = \int_{-6}^3 (14 - 3x) dx = \left(14x - \frac{3x^2}{2} \right) \Big|_{-6}^3 = \left(42 - \frac{27}{2} \right) - \left(-84 - \frac{108}{2} \right) =$$

$$= 126 + 54 - 13,5 = 166,5$$

$$3) x^2 - 4 = 0, \quad x = \pm 2$$

$$4) S_2 = \int_{-6}^{-2} (x^2 - 4) dx = \left(\frac{x^3}{3} - 4x \right) \Big|_{-6}^{-2} = \left(-\frac{8}{3} + 8 \right) - \left(-\frac{108}{3} + 24 \right) =$$

$$= -2\frac{2}{3} + 8 + 36 - 24 = 17\frac{1}{3}$$

$$5) S_3 = \int_2^3 (x^2 - 4) dx = \left(\frac{x^3}{3} - 4x \right) \Big|_2^3 = (9 - 12) - \left(\frac{8}{3} - 8 \right) = -3 - 2\frac{2}{3} + 8 = 2\frac{1}{3}$$

$$6) S = S_1 - S_2 - S_3 = 166,5 - 17\frac{1}{3} - 2\frac{1}{3} = 146\frac{5}{6}$$