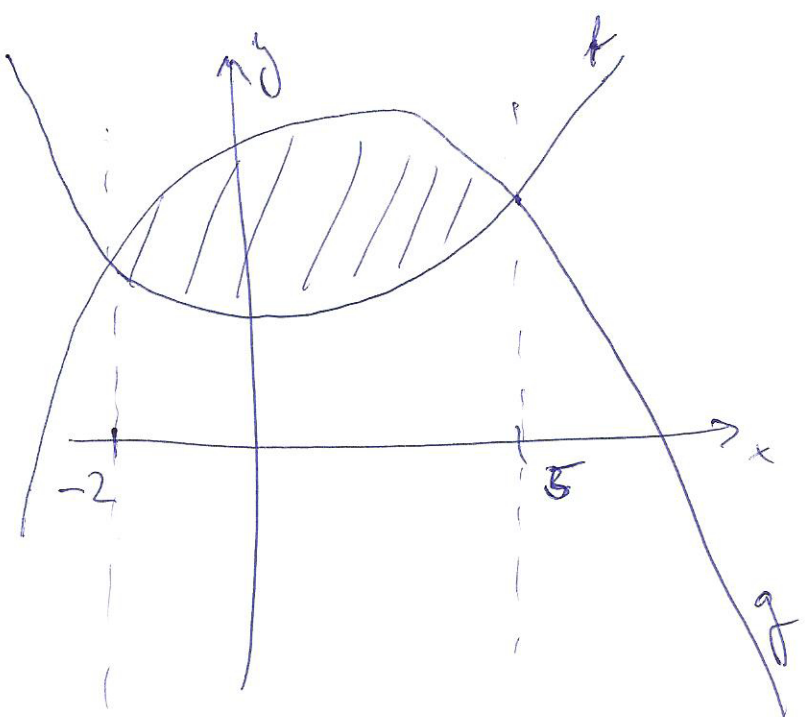
(2) (c) $S = ?$ $f: y = x^2 - x - 6$ $g: y = -x^2 + 5x + 14$



$f \cap g$:

$x^2 - x - 6 = -x^2 + 5x + 14$

$2x^2 - 6x - 20 = 0$

$x^2 - 3x - 10 = 0$

$(x - 5) \cdot (x + 2) = 0$

$x_1 = 5 \qquad x_2 = -2$

$$S = \int_{-2}^{5} (g(x) - f(x))\,dx = \int_{-2}^{5} [(-x^2 + 5x + 14) - (x^2 - x - 6)]\,dx =$$

$$= \int_{-2}^{5} [-2x^2 + 6x + 20]\,dx =$$

$$= \left[-2\frac{x^3}{3} + \cancel{6}^{3}\frac{x^2}{\cancel{2}} + 20x\right]_{-2}^{5} =$$

$$= \left[-2 \cdot \frac{5^3}{3} + 3 \cdot 5^2 + 20 \cdot 5\right] - \left[-2 \cdot \frac{(-2)^3}{3} + 3 \cdot (-2)^2 + 20 \cdot (-2)\right] =$$

$$= -\frac{250}{3} + 75 + 100 - \frac{16}{3} - 12 + 40 =$$

$$= -\frac{266}{3} + 203 = \frac{609 - 266}{3} = \frac{343}{3} = 114\frac{1}{3}$$