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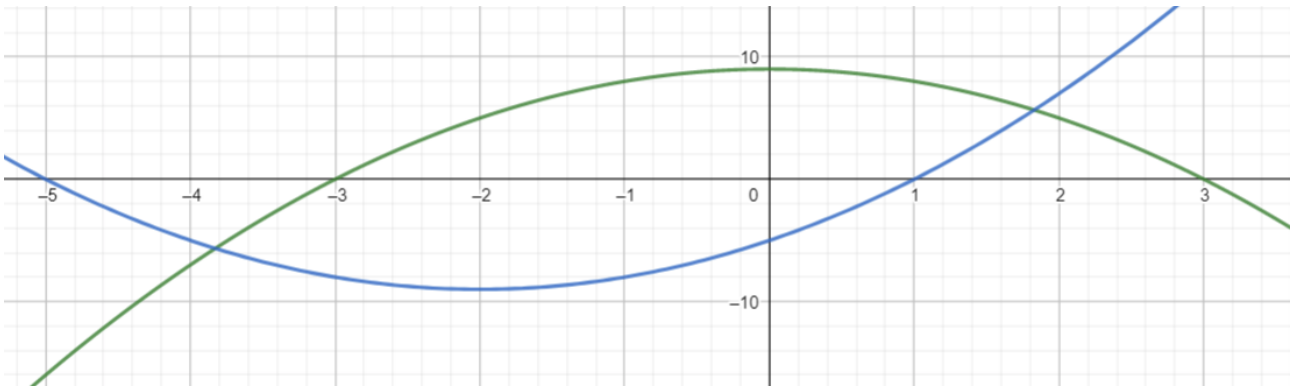
Opgave 375

$$f(x) = -x^2 + 9$$
$$g(x) = x^2 + 4x - 5$$



Find skæringpunkter

$$g(x) = f(x)$$
$$x^2 + 4x - 5 = -x^2 + 9$$
$$x^2 + x^2 + 4x - 5 - 9 = 0$$

$$2x^2 + 4x - 14 = 0$$

$$a = 2$$
$$b = 4$$
$$c = -14$$

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x_{1,2} = \frac{-4 \pm \sqrt{4^2 - 4 \cdot 2 \cdot (-14)}}{2 \cdot 2}$$
$$Define: x_1 = -3{,}828427$$
$$Define: x_2 = 1{,}828427$$

Find Areal

$$F(x) = \int_{x_1}^{x_2} f(x) - g(x)\, dx$$
$$Define: F(x) = -\frac{1}{3}x^3 + 9x - \frac{1}{3}x^3 - \frac{4}{2}x^2 + 5x$$

$$A = [F(x)]_{x_1}^{x_2}$$

$$A = F(x_2) - F(x_1)$$
$$A = 60{,}33978$$