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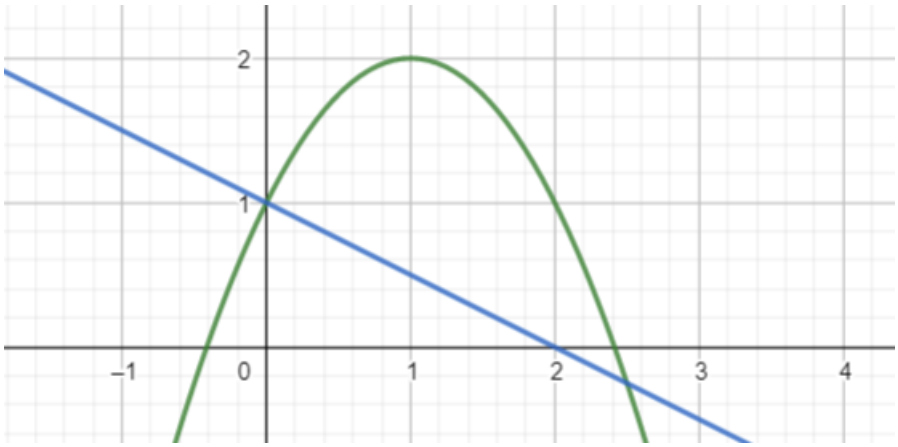
Opgave 373

$$f(x) = -x^2 + 2x + 1$$

$$g(x) = -0.5x + 1$$



Find skærings punkter mellem f og g

$$\begin{aligned} &f(x) = g(x) \\ &-x^2 + 2x + 1 = -0.5x + 1 \\ &-x^2 + 2x + 0.5x + 1 - 1 = 0 \\ &-x^2 + 2.5x = 0 \end{aligned}$$

$$\begin{aligned} a &= -1 \\ b &= 2.5 \\ c &= 0 \end{aligned}$$

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

$$x_{1,2} = \frac{-2.5 \pm \sqrt{2.5^2 - 4 \cdot (-1) \cdot 0}}{2 \cdot (-1)}$$

$$x_1 = 0$$

$$x_2 = 2{,}5$$

Find areal imellem

$$F(x) = \int_{x_1}^{x_2} f(x) - g(x)\, dx$$

$$Define: F(x) = -\frac{1}{3}x^3 + \frac{2}{2}x^2 + x + \frac{0.5}{2}x^2 - x$$

$$A = [F(x)]_{x_1}^{x_2}$$
$$A = F(2.5) - F(0)$$
$$A = 2{,}604167$$