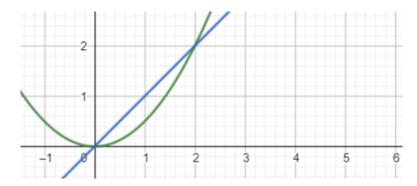
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Opgave 404



$$f(x) = \frac{1}{2}x^2$$
$$g(x) = x$$

Find skæringpunkter

$$f(x) = g(x)$$

$$\frac{1}{2}x^2 = x$$

$$\frac{1}{2}x^2 - x = 0$$

$$a = \frac{1}{2}$$

$$b = -1$$

$$c = 0$$

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

$$x_1 = \frac{-(-1) - \sqrt{(-1)^2 - 4 \cdot \frac{1}{2} \cdot 0}}{2 \cdot \frac{1}{2}}$$

$$x_1 = 0$$

$$x_2 = \frac{-(-1) + \sqrt{(-1)^2 - 4 \cdot \frac{1}{2} \cdot 0}}{2 \cdot \frac{1}{2}}$$

$$x_2 = 2$$

Find areal mellem funktionerne

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$$A_{1} = \int_{0}^{2} \frac{1}{2}x^{2}dx$$

$$A_{1} = 1,3333333$$

$$A_{2} = \int_{0}^{2} x dx$$

$$A_{2} = 2$$

$$A = A_{2} - A_{1}$$

$$A = 2 - 1.33$$

$$A = 0,67$$

Find rumfang mellem funktionerne

$$V_{1} = \pi \cdot \int_{0}^{2} \left(\frac{1}{2}x^{2}\right)^{2} dx$$

$$V_{1} = 5,026548$$

$$V_{2} = \pi \cdot \int_{0}^{2} x^{2} dx$$

$$V_{2} = 8,37758$$

$$V = V_{2} - V_{1}$$

$$V = 8.377 - 5.026$$

$$V = 3,351$$

CAS

Define:
$$f(x) = \frac{1}{2}x^2$$

Define: $g(x) = x$
 $f(x) = g(x)$

iggtharpoonup The equation is solved for x by WordMat. x=0 V x=2

$$A = \int_0^2 g(x) - f(x)dx \approx 0,6666667$$

$$V = \pi \int_0^2 g(x)^2 - f(x)^2 dx \approx 3,351032$$