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Opgave 370

$$f(x) = -x^2 + 12x - 32$$

$$x_{start} = 0$$

$$x_{slut} = 10$$

Find skæring med akse

$$f(x) = 0$$

$$-x^2 + 12x - 32 = 0$$

$$a = -1$$

$$b = 12$$

$$c = -32$$

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

$$x_{1,2} = \frac{-12 \pm \sqrt{12^2 - 4 \cdot (-1) \cdot (-32)}}{2 \cdot (-1)}$$

$$x_1 = 4$$

$$x_2 = 8$$

$$F(x) = \int f(x) dx$$

$$\text{Define: } F(x) = -\frac{1}{3}x^3 + \frac{12}{2}x^2 - 32x$$

$$A_1 = [F(x)]_{x_{start}}^{x_1}$$

$$A_1 = F(4) - F(0)$$

$$\text{Define: } A_1 = -53,33333$$

$$A_2 = [F(x)]_{x_1}^{x_2}$$

$$A_2 = F(8) - F(4)$$

$$\text{Define: } A_2 = 10,66667$$

$$A_3 = [F(x)]_{x_2}^{x_{slut}}$$

$$A_3 = F(10) - F(8)$$

$$\text{Define: } A_3 = -10,66667$$

$$A = |A_1| + A_2 + |A_3|$$

$$A = 74,66667$$

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