	Navn:		Skole:	
	Klasse: 20		Dato: 23. november 2022	Fag: Matematik A

Opgave 406

$$f(x) = \frac{1}{2}x + 3$$

$$x_1 = 2$$
$$x_2 = 4$$

Opgave A)

$$V_x = \pi \int_{x_1}^{x_2} f(x)^2 dx$$
$$V_x = \pi \int_{x_1}^{x_2} \left(\frac{1}{2}x + 3\right)^2 dx$$
$$V_x = \pi \int_{x_1}^{x_2} \frac{1}{4}x^2 + 9 + 3x \, dx$$
$$V_x = \pi \left[\frac{1}{7}x^3 + 9x + \frac{1}{2}x^2\right]_{x_1}^{x_2}$$
$$V_x = 127{,}7581$$

Opgave B)

$$V_y = 2\pi \cdot \int_{x_1}^{x_2} x \cdot f(x) \, dx$$
$$V_y = 2\pi \int_{2}^{4} x \cdot \left(\frac{1}{2}x + 3\right) dx$$
$$V_y = 2\pi \int_{2}^{4} \frac{1}{2}x^2 + 3x \, dx \approx 171{,}7404$$