

## Heimaverkefni 2 lausn

$$1. \int_{-2}^4 dx = [x]_{-2}^4 = 4 - (-2) = \mathbf{6}$$

$$2. \int_0^1 (1 + x^4) dx = \left[ x + \frac{x^5}{5} \right]_0^1 = \left( 1 + \frac{1^5}{5} \right) - \left( 0 + \frac{0^5}{5} \right) = \frac{6}{5} = \mathbf{1,2}$$

$$3. \int_1^2 (6x^3 - 4x^2 + 2x + 5) dx = \left[ \frac{6}{4}x^4 - \frac{4}{3}x^3 + x^2 + 5x \right]_1^2$$
$$= \left( \frac{6}{4}2^4 - \frac{4}{3}2^3 + 2^2 + 5 \cdot 2 \right) - \left( \frac{6}{4}1^4 - \frac{4}{3}1^3 + 1^2 + 5 \right) = \frac{127}{6} = \mathbf{21,17}$$

$$4. \int_0^{\frac{\pi}{3}} \sin(x) dx = [-\cos(x)]_0^{\frac{\pi}{3}} = \left( -\cos\left(\frac{\pi}{3}\right) \right) - \left( -\cos(0) \right) = \frac{1}{2}$$

$$5. \int_0^{\frac{\pi}{3}} \sin(2x) dx = \left[ \frac{\cos(2x)}{2} \right]_0^{\frac{\pi}{3}} = \frac{1}{4} - \left( -\frac{1}{2} \right) = \frac{3}{4}$$

$$6. \int_0^1 e^{-x} dx = [-e^{-x}]_0^1 = \mathbf{1 - e^{-1} = 0,63}$$