

Nr. 1) a) $f(x) = \frac{1}{2}x^2$; $a=1$; $b=3$

$$\bar{m} = \frac{1}{3-1} \cdot \int_1^3 \left(\frac{1}{2}x^2\right) dx = \frac{1}{2} \left[\frac{1}{2} \cdot \frac{x^3}{3} \right]_1^3 = \frac{1}{2} \left(\frac{1}{2} \cdot 9 - \left\{ \frac{1}{2} \cdot \frac{1}{3} \right\} \right)$$

$$\bar{m} = \underline{\underline{\frac{13}{6}}}$$

b) $f(x) = 2x - \frac{1}{2}$; $a=-2$; $b=4$

$$\bar{m} = \frac{1}{4-(-2)} \cdot \int_{-2}^4 \left(2x - \frac{1}{2}\right) dx = \frac{1}{6} \left[2 \cdot \frac{x^2}{2} - \frac{1}{2}x \right]_{-2}^4$$

$$\bar{m} = \frac{1}{6} \cdot \left(16 - \frac{1}{2} \cdot 4 - \left\{ 2 \cdot \frac{(-2)^2}{2} - \frac{1}{2}(-2) \right\} \right) = \underline{\underline{\frac{3}{2}}}$$

c) $f(x) = 2x^3 - 3$; $a=-2$; $b=1$

$$\bar{m} = \frac{1}{1-(-2)} \int_{-2}^1 (2x^3 - 3) dx = \frac{1}{3} \cdot \left[2 \cdot \frac{x^4}{4} - 3x \right]_{-2}^1$$

$$\bar{m} = \frac{1}{3} \cdot \left(\frac{1}{2} - 3 - \left\{ 8 - 3 \cdot (-2) \right\} \right) = \underline{\underline{-\frac{11}{2}}}$$

d) $f(x) = 8 - x^2$; $a=-5$; $b=5$

$$\bar{m} = \frac{1}{5-(-5)} \cdot \int_{-5}^5 (8 - x^2) dx = \frac{1}{10} \cdot \left[8x - \frac{x^3}{3} \right]_{-5}^5$$

$$\bar{m} = \frac{1}{10} \cdot \left(40 - \frac{125}{3} - \left\{ -40 - \frac{(-125)}{3} \right\} \right) = \underline{\underline{-\frac{1}{3}}}$$