

$$\text{Nr. 2) a) } f(x) = x \cdot (x - 3) = x^2 - 3x \Rightarrow \underline{f'(x) = 2x - 3}$$

$$\Rightarrow \underline{f''(x) = 2}$$

$$\text{b) } g(x) = (x + 4)^2 = x^2 + 8x + 16 \Rightarrow \underline{f'(x) = 2x + 8}$$

$$\Rightarrow \underline{f''(x) = 2}$$

$$\text{c) } u(v) = v^4 - \frac{2}{v^3} = v^4 - 2 \cdot v^{-3} \Rightarrow u'(v) = 4v^3 + 6v^{-4}$$

$$\Rightarrow \underline{u'(v) = 4v^3 + \frac{6}{v^4}} \Rightarrow \underline{u''(v) = 12v^2 - 24v^{-5} = 12v^2 - \frac{24}{v^5}}$$

$$\text{d) } h(a) = a \cdot \left(a + \frac{1}{a}\right) = a^2 + 1 \Rightarrow \overset{(a \neq 0)}{h'(a) = 2a} \Rightarrow \underline{h''(a) = 2}$$

$$\text{e) } h(t) = (2t - 4)(4 - t) = 8t - 2t^2 - 16 + 4t = -2t^2 + 12t - 16$$

$$\underline{h'(t) = -4t + 12} \Rightarrow \underline{h''(t) = -4}$$

$$\text{f) } f(x) = \frac{6x^3 - x^2}{2x} = 3x^2 - \frac{1}{2}x ; x \neq 0$$

$$\underline{f'(x) = 6x - \frac{1}{2}} \Rightarrow \underline{f''(x) = 6}$$