

S 31 Nr. 1

$$a) f(x) = x^3 \Rightarrow \underline{\underline{f'(x) = 3x^2}}; \quad b) f(x) = x^{10} \Rightarrow \underline{\underline{f'(x) = 10x^9}}$$

$$c) f(x) = x^{-4} \Rightarrow \underline{\underline{f'(x) = -4x^{-5}}}; \quad d) f(x) = x^3 + x^5 \Rightarrow \underline{\underline{f'(x) = 3x^2 + 5x^4}}$$

$$e) f(x) = x^{11} + x^{-10} \Rightarrow \underline{\underline{f'(x) = 11x^{10} + (-10) \cdot x^{-11} = 11x^{10} - \frac{10}{x^{11}}}}$$

$$f) f(x) = 3x^4 + 5x^7 \Rightarrow \underline{\underline{f'(x) = 3 \cdot 4x^3 + 5 \cdot 7x^6 = 12x^3 + 35x^6}}$$

$$g) f(x) = -4x^{-4} - \frac{1}{5}x^5 \Rightarrow f'(x) = -4 \cdot (-4) \cdot x^{-5} - \frac{1}{5} \cdot 5 \cdot x^4$$

$$\underline{\underline{f'(x) = \frac{16}{x^5} - x^4}}$$

$$h) f(x) = -\frac{1}{x^2} - \frac{3}{x^5} = -1 \cdot x^{-2} - 3 \cdot x^{-5} \Rightarrow$$

$$\underline{\underline{f'(x) = -1 \cdot (-2) \cdot x^{-3} - 3 \cdot (-5) \cdot x^{-6} = \frac{2}{x^3} + \frac{15}{x^6}}}$$

$$i) f(x) = -\frac{3}{x^2} - 3x^2 = -3 \cdot x^{-2} - 3x^2 \Rightarrow$$

$$\underline{\underline{f'(x) = -3 \cdot (-2) \cdot x^{-3} - 3 \cdot 2x^1 = \frac{6}{x^3} - 6x}}$$