

$$\lim_{t \rightarrow 3} \frac{f(t) - f(3)}{t - 3} = \lim_{t \rightarrow 3} \frac{1,25t^3 - 15t^2 + 45t - 33,75}{t - 3}$$

$$\begin{array}{r} (1,25t^3 - 15t^2 + 45t - 33,75) : (t - 3) = 1,25t^2 - 11,25t + 11,25 \\ -(1,25t^3 - 3,75t^2) \\ \hline -11,25t^2 + 45t \\ -(-11,25t^2 + 33,75t) \\ \hline 11,25t - 33,75 \\ -(11,25t - 33,75) \\ \hline 0 \end{array}$$

$$= \lim_{t \rightarrow 3} \frac{\cancel{(t-3)} \cdot (1,25t^2 - 11,25t + 11,25)}{\cancel{(t-3)}} = \lim_{t \rightarrow 3} 1,25t^2 - 11,25t + 11,25$$

$$= 1,25 \cdot 3^2 - 11,25 \cdot 3 + 11,25 = \underline{\underline{-11,25}}$$

$$\lim_{h \rightarrow 0} \frac{f(3+h) - f(3)}{h} = \lim_{h \rightarrow 0} \frac{1,25(3+h)^3 - 15(3+h)^2 + 45(3+h) - 33,75}{h}$$

$$= \lim_{h \rightarrow 0} \frac{1,25(3+h)(3+h)^2 - 15(3+h)^2 + 45(3+h) - 33,75}{h}$$

$$= \lim_{h \rightarrow 0} \frac{1,25(3+h)(9+6h+h^2) - 15(9+6h+h^2) + 135 + 45h - 33,75}{h}$$

$$= \lim_{h \rightarrow 0} \frac{1,25(27+9h+18h+6h^2+3h^2+h^3) - 135 - 90h - 15h^2 + 135 + 45h - 33,75}{h}$$

$$= \lim_{h \rightarrow 0} \frac{\cancel{33,75} + 33,75h + 11,25h^2 + 1,25h^3 - \cancel{135} - 90h - 15h^2 + \cancel{135} + 45h - \cancel{33,75}}{h}$$

$$= \lim_{h \rightarrow 0} \frac{1,25h^3 - 3,75h^2 - 11,25h}{h} = \lim_{h \rightarrow 0} 1,25h^2 - 3,75h - 11,25$$

$$= 1,25 \cdot 0^2 - 3,75 \cdot 0 - 11,25 = \underline{\underline{-11,25}}$$