

## 5.7 1)

$$\lim_{x \rightarrow 3} \frac{f^2(x) - 1}{f(x) - 1} = \lim_{x \rightarrow 3} \frac{\cancel{[f(x) - 1]} [f(x) + 1]}{\cancel{f(x) - 1}} = \lim_{x \rightarrow 3} [f(x) + 1] = 3 + 1 = \boxed{4}$$

## 5.7 2)

$$\lim_{x \rightarrow -2} \frac{6f(x) + 18}{f^2(x) - 9} = \lim_{x \rightarrow -2} \frac{6\cancel{[f(x) + 3]}}{\cancel{[f(x) + 3]} [f(x) - 3]} = \lim_{x \rightarrow -2} \frac{6}{f(x) - 3} = \frac{6}{-3 - 3} = \boxed{-1}$$

## 5.7 3)

$$\lim_{x \rightarrow 7} \frac{f^2(x) - f(x) - 2}{f(x) - 2} = \lim_{x \rightarrow 7} \frac{[f(x) + 1] \cancel{[f(x) - 2]}}{\cancel{f(x) - 2}} \stackrel{\text{επεξήγηση}}{=} \lim_{x \rightarrow 7} [f(x) + 1] = 2 + 1 = \boxed{3}$$

επεξήγηση

$$\begin{aligned} \Delta = 9, \quad x_{1,2} = \frac{1 \pm \sqrt{3}}{2 \cdot 1} = \frac{1 \pm 3}{2} &\Rightarrow \begin{cases} y_1 = \frac{1-3}{2} = -1 \\ y_2 = \frac{1+3}{2} = 2 \end{cases} \\ f^2(x) - f(x) - 2 &\stackrel{\text{θετικά } y=f(x)}{=} y^2 - y - 2 = (y+1)(y-2) = \\ &= [f(x) + 1][f(x) - 2] \end{aligned}$$