

$$10. \lim_{x \rightarrow 4} \frac{2x^2 - 9x + 4}{x - 4} \quad (\text{KEY \#})$$

$$① = \lim_{x \rightarrow 4} \frac{(2x - 1)(x - 4)}{x - 4}$$

$$② \lim_{x \rightarrow 4} 2x - 1$$

$$③ = 2(4) - 1 \\ = 8 - 1 \\ = \boxed{7}$$

$$11. \lim_{x \rightarrow -3} \frac{x^2 - 4x - 21}{x^2 - 9} \quad (\text{PSD})$$

$$① \lim_{x \rightarrow -3} \frac{(x - 7)(x + 3)}{(x + 3)(x - 3)}$$

$$② \lim_{x \rightarrow -3} \frac{x - 7}{x - 3}$$

$$③ = \frac{-3 - 7}{-3 - 3} \\ = \frac{-10}{-6} \\ = \boxed{\frac{5}{3}}$$

$$12. \lim_{x \rightarrow 7} \left(\frac{\sqrt{x+2} - 3}{x - 7} \right)$$

CONJUGATE METHOD

MULTIPLY THE TOP AND BOTTOM
BY THE CONJUGATE OF THE TOP

$$= \lim_{x \rightarrow 7} \frac{\sqrt{x+2} - 3}{x - 7} \cdot \frac{\sqrt{x+2} + 3}{\sqrt{x+2} + 3}$$

$$= \lim_{x \rightarrow 7} \frac{x + 2 - 9}{(x - 7)(\sqrt{x+2} + 3)}$$

$$= \lim_{x \rightarrow 7} \frac{x - 7}{(x - 7)(\sqrt{x+2} + 3)}$$

$$= \lim_{x \rightarrow 7} \frac{1}{\sqrt{x+2} + 3}$$

$$= \frac{1}{\sqrt{7+2} + 3}$$

$$= \frac{1}{\sqrt{9} + 3}$$

$$= \frac{1}{3+3} = \boxed{\frac{1}{6}}$$