

5.11 1)

$$\lim_{x \rightarrow 2^-} \frac{3x - 6 - |x - 2|}{2x - 4} \stackrel{\substack{\text{όταν } x < 2 \\ x - 2 < 0}}{=} \lim_{x \rightarrow 2^-} \frac{3x - 6 - (-x + 2)}{2(x - 2)} = \lim_{x \rightarrow 2^-} \frac{4x - 8}{2(x - 2)} = \lim_{x \rightarrow 2^-} \frac{4(\cancel{x - 2})}{2(\cancel{x - 2})} = 2$$

5.11 2)

$$\lim_{x \rightarrow 3^+} \frac{2|x - 3|}{x - 3} \stackrel{\substack{\text{όταν } x > 3 \\ x - 3 > 0}}{=} \lim_{x \rightarrow 3^+} \frac{2(\cancel{x - 3})}{\cancel{x - 3}} = 2$$

5.11 3)

$$\begin{aligned} \lim_{x \rightarrow 5^+} \frac{6x - 30}{2|x - 5| - 4x + 20} &\stackrel{\substack{\text{όταν } x > 5 \\ x - 5 > 0}}{=} \lim_{x \rightarrow 5^+} \frac{6(x - 5)}{2(x - 5) - 4x + 20} = \lim_{x \rightarrow 5^+} \frac{6(x - 5)}{2x - 10 - 4x + 20} = \\ &= \lim_{x \rightarrow 5^+} \frac{6(x - 5)}{-2x + 10} = \lim_{x \rightarrow 5^+} \frac{6(\cancel{x - 5})}{-2(\cancel{x - 5})} = -3 \end{aligned}$$

5.11 4)

$$\lim_{x \rightarrow -4^-} \frac{x^2 + 5x + 4}{|x + 4|} \stackrel{\substack{\text{όταν } x < -4 \Rightarrow x + 4 < 0 \\ x^2 + 5x + 4 = (x + 1)(x + 4)}}{=} \lim_{x \rightarrow -4^-} \frac{(x + 1)(\cancel{x + 4})}{-(\cancel{x + 4})} = \lim_{x \rightarrow -4^-} \frac{-4 + 1}{-1} = 3$$

5.11 5)

$$\begin{aligned} \lim_{x \rightarrow 1^+} \frac{|x - 1| + x^2 - 3x + 2}{x - 1} &\stackrel{\substack{\lim_{x \rightarrow 1^+} (x - 1) = 0^+ \\ (\text{όταν } x > 1 \Rightarrow x - 1 > 0)}}{=} \lim_{x \rightarrow 1^+} \frac{x - 1 + x^2 - 3x + 2}{x - 1} = \lim_{x \rightarrow 1^+} \frac{x^2 - 2x + 1}{x - 1} = \\ &= \lim_{x \rightarrow 1^+} \frac{(\cancel{x - 1})^2}{\cancel{x - 1}} = 1 - 1 = \boxed{0} \end{aligned}$$