

5.1 1)

$$\alpha) \quad \lim_{x \rightarrow 1} (4x^3 - 5x^2 + 2x - 4) = 4 \cdot 1^3 - 5 \cdot 1^2 + 2 \cdot 1 - 4 = \boxed{-3}$$

$$\beta) \quad \lim_{x \rightarrow -2} \frac{|x+1| - |x-1|}{|x+1| + |x-1|} = \frac{|-2+1| - |-2-1|}{|-2+1| + |-2-1|} = \frac{|-1| - |-3|}{|-1| + |-3|} = \frac{1-3}{1+3} = \frac{-2}{4} = \boxed{-\frac{1}{2}}$$

5.1 2)

$$\lim_{x \rightarrow 2} (x^2 + 3x - 1) = 2^2 + 3 \cdot 2 - 1 = 4 + 6 - 1 = \boxed{9}$$

5.1 3)

$$\lim_{x \rightarrow -3} (2x^2 + 4x - 5)^3 = \left[2 \cdot (-3)^2 + 4 \cdot (-3) - 5 \right]^3 = (18 - 12 - 5)^3 = 1^3 = \boxed{1}$$

5.1 4)

$$\lim_{x \rightarrow -2} (x^3 + 3x^2 + x - 1) = (-2)^3 + 3 \cdot (-2)^2 + (-2) - 1 = -8 + 12 - 2 - 1 = \boxed{1}$$

5.1 5)

$$\lim_{x \rightarrow 3} \frac{x+1}{x-1} = \frac{3+1}{3-1} = \frac{4}{2} = \boxed{2}$$

5.1 6)

$$\lim_{x \rightarrow -2} \frac{x^2 - 3x - 2}{-x + 2} = \frac{(-2)^2 - 3(-2) - 2}{-(-2) + 2} = \frac{4 + 6 - 2}{2 + 2} = \frac{8}{4} = \boxed{2}$$

5.1 7)

$$\lim_{x \rightarrow 0} (x - |x^2 - 1|) = 0 - |0^2 - 1| = \boxed{-1}$$

5.1 8)

$$\lim_{x \rightarrow 1} \frac{\sqrt{x+3} - 3}{2x - 1} = \frac{\sqrt{1+3} - 3}{2 \cdot 1 - 1} = \frac{2 - 3}{2 - 1} = \frac{-1}{1} = \boxed{-1}$$