

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

$$x > -2, x+2 > 0$$

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

$$x < -2, x+2 < 0$$

$$3. \lim_{x \rightarrow -2} \frac{x+2}{|x+2|} \quad \boxed{\text{DNE}}$$

$$4. \lim_{x \rightarrow 5^+} \frac{|x-5|}{5-x} = \lim_{x \rightarrow 5^+} \frac{x-5}{-(x-5)} = \lim_{x \rightarrow 5^+} -1 = \boxed{-1}$$

$$x > 5, x-5 > 0$$

$$5. \lim_{x \rightarrow 5^-} \frac{|x-5|}{5-x} = \lim_{x \rightarrow 5^-} \frac{-(x-5)}{-(x-5)} = \lim_{x \rightarrow 5^-} 1 = \boxed{1}$$

$$x < 5, x-5 < 0$$

$$6. \lim_{x \rightarrow 5} \frac{|x-5|}{5-x} \quad \boxed{\text{DNE}}$$

$$7. \lim_{x \rightarrow 0} |x| \sin\left(\frac{1}{x^2}\right)$$

$$-1 \leq \sin\left(\frac{1}{x^2}\right) \leq 1$$

$$-|x| \leq |x| \sin\left(\frac{1}{x^2}\right) \leq |x|$$

$$\lim_{x \rightarrow 0} -|x| = 0$$

$$\lim_{x \rightarrow 0} |x| = 0$$

so, by Squeeze Theorem,

$$\boxed{\lim_{x \rightarrow 0} |x| \sin\left(\frac{1}{x^2}\right) = 0}$$

$$8. \lim_{x \rightarrow 0} x^5 \cos \frac{1}{x^3}$$

$$-1 \leq \cos \frac{1}{x^3} \leq 1$$

$$x > 0, x^5 > 0$$

$$x < 0, x^5 < 0$$

$$-x^5 \leq x^5 \cos \frac{1}{x^3} \leq x^5$$

$$-x^5 \geq x^5 \cos \frac{1}{x^3} \geq x^5$$

$$\lim_{x \rightarrow 0^+} -x^5 = 0 = \lim_{x \rightarrow 0^+} x^5$$

$$\lim_{x \rightarrow 0^-} -x^5 = 0 = \lim_{x \rightarrow 0^-} x^5$$

by Squeeze Theorem,

$$\lim_{x \rightarrow 0^+} x^5 \cos \frac{1}{x^3} = 0$$

by Squeeze Theorem,

$$\lim_{x \rightarrow 0^-} x^5 \cos \frac{1}{x^3} = 0$$

$$\text{so, } \boxed{\lim_{x \rightarrow 0} x^5 \cos \frac{1}{x^3} = 0}$$

$$9. \lim_{x \rightarrow 31} \pi = \boxed{\pi}$$

$$10. \lim_{x \rightarrow -1} 90 = \boxed{90}$$