

1 g.) 1

$$2 z.) \lim_{x \rightarrow 3^-} [x + 2]$$

$$[2.9 + 2]$$

$$[4.9]$$

4

$$2b.) \lim_{x \rightarrow 0} \frac{11x}{\sin 4x}$$

$$\parallel \lim_{x \rightarrow 0} \frac{x}{\sin 4x} \cdot \frac{4}{4}$$

$$\parallel \frac{11}{4} \left[\lim_{x \rightarrow 0} \frac{4x}{\sin 4x} \right]$$

$$\parallel \frac{11}{4}$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$

$$h.) \lim_{x \rightarrow \infty} \frac{x^2}{2^x} = 0$$

$$2f.) \lim_{x \rightarrow 2} \frac{x-2}{\sqrt{x}-\sqrt{4-x}} \cdot \frac{(\sqrt{x}+\sqrt{4-x})}{(\sqrt{x}+\sqrt{4-x})}$$

$$\lim_{x \rightarrow 2} \frac{(x-2)(\sqrt{x}+\sqrt{4-x})}{x-(4-x) \quad 2(x-2)}$$

$2x-4$

$$\frac{\sqrt{2} + \sqrt{2}}{2} = \frac{2\sqrt{2}}{2} = \sqrt{2}$$

$$2x.) \lim_{x \rightarrow \infty} \sec\left(\frac{1}{x}\right) = \sec 0 = 1$$

$$2i.) \lim_{x \rightarrow 5} \csc\left(\frac{\pi x}{4}\right) = \csc \frac{5\pi}{4} \\ = -\sqrt{2}$$

$$9.) \lim_{h \rightarrow 0} \frac{(x+h)^3 - x^3}{h}$$

$$\lim_{h \rightarrow 0} \frac{\cancel{x^3} + 3x^2h + 3xh^2 + \cancel{h^3} - x^3}{h}$$

$$\lim_{h \rightarrow 0} \frac{x(3x^2 + 3xh + h^2)}{h}$$

$$3x^2$$

$$(x+h)^3 \neq x^3 + h^3$$

$$\downarrow$$
$$(x+h)(x+h)(x+h)$$

Multiple Choice Answers

- 1) D
- 2) A
- 3) C
- 4) D
- 5) E
- 6) D
- 7) E
- 8) B

$$\frac{(\sqrt{2x+5} - \sqrt{x+7})}{x-2} \cdot \frac{(\sqrt{2x+5} + \sqrt{x+7})}{(\sqrt{2x+5} + \sqrt{x+7})}$$
$$\frac{\cancel{2x+5} - \cancel{(x+7)}}{\cancel{(x-2)}(\sqrt{2x+5} + \sqrt{x+7})} = \frac{1}{\sqrt{2x+5} + \sqrt{x+7}}$$

$$\lim_{x \rightarrow 0} x \csc x$$

$$\lim_{x \rightarrow 0} \frac{x}{\sin x}$$

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$$\lim_{x \rightarrow 0} \frac{\sin^2(2x)}{x^2}$$

$$\lim_{x \rightarrow 0} \frac{\sin 2x \cdot \sin 2x \cdot 2}{2 \cdot x \cdot x \cdot 2}$$

$$4(1)(1) = 4$$