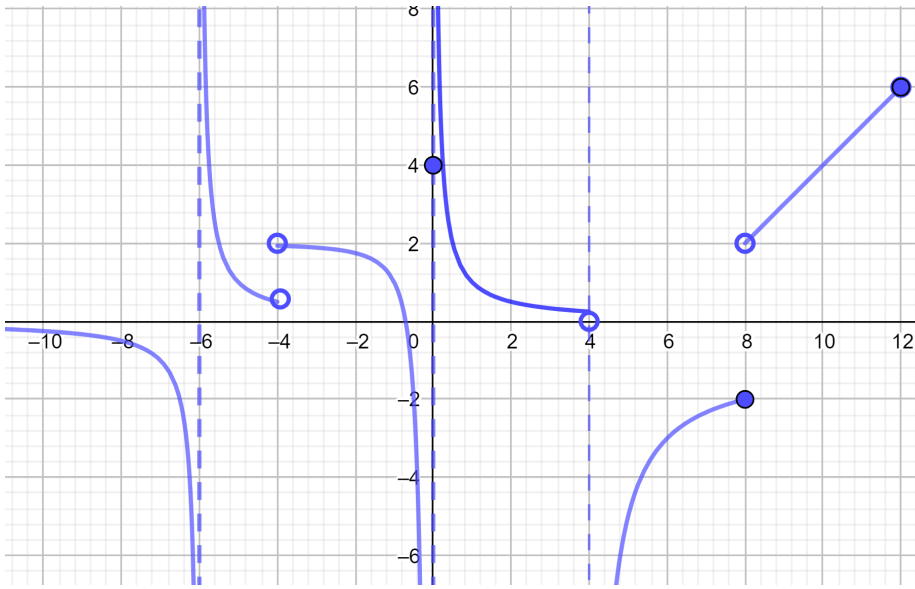
Name _____

ID number _____-

Section number _____

Quiz1 - Calculus I - V1

1. For the function f whose graph is shown, state the following..



☐ **A.** $\lim_{x\to 8} f(x) =$ DNE

☐ **B.** $\lim_{x\to -6^+} f(x) = \infty$

☐ **C.** $\lim_{x\to 4^-} f(x) = 0$

☐ **D.** $\lim_{x\to -4^+} f(x) = 2$

☐ **E.** The equations of the vertical asymptote

$x = -6$, $x = 0$, $x = 4$

2. Evaluate the limit, if it exists.

$$\lim_{x\to 2} \frac{x^2-4}{x-2} = \frac{0}{0}$$

$$\lim_{x\to 2} \frac{(x-2)(x+2)}{x-2}$$

$$\lim_{x\to 2} \frac{x+2}{1} = \frac{2+2}{1} = \frac{4}{1} = 4$$

$$\lim_{x\to 2} \frac{x^2-4}{x-2} = 4$$

3. Evaluate the limit, if it exists.

$$\lim_{x\to 9}\frac{9-x}{\sqrt{x}-3} = \frac{0}{0}$$

$$\lim_{x\to 9}\frac{9-x}{\sqrt{x}-3}\cdot\frac{\sqrt{x}+3}{\sqrt{x}+3}$$

$$\lim_{x\to 9}\frac{9-x\,(\sqrt{x}+3)}{x\neq 9}$$

$$\lim_{x\to 9}\frac{\sqrt{x}+3}{-1} = \frac{\sqrt{9}+3}{-1} = \frac{6}{-1} = -6$$

$$\boxed{\lim_{x\to 9}\frac{9-x}{\sqrt{x}-3} = -6}$$

$$\lim_{x\to 9}\frac{9-x}{\sqrt{x}-3} = \frac{0}{0}$$

$$\frac{9-x}{\sqrt{x}-3}\times\frac{\sqrt{x}+3}{\sqrt{x}+3}$$

$$\frac{(9-x)\sqrt{x}+3}{x-9} \to \frac{-(x\neq 9)\sqrt{x}+3}{x\neq 9}$$

$$\frac{\sqrt{x}+3}{-1} = -6$$