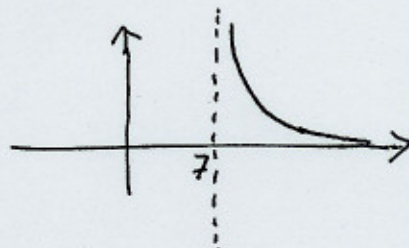


Name: Solution I.D. # \_\_\_\_\_ Section # \_\_\_\_\_ Serial # \_\_\_\_\_

1. Find each of the following limits:

i)  $\lim_{x \rightarrow 7^+} \frac{1}{x-7} = +\infty$



ii)  $\lim_{x \rightarrow 0^-} \frac{-5x}{|x|} = \lim_{x \rightarrow 0^-} \frac{-5x}{-x} = 5$

$$\lim_{t \rightarrow 1} \frac{t^3 - 1}{5t - 5} = \lim_{t \rightarrow 1} \frac{(t-1)(t^2+t+1)}{5(t-1)} = \lim_{t \rightarrow 1} \frac{t^2+t+1}{5} = \frac{3}{5}$$

2. Find the vertical asymptote(s), if any, for the graph of the function  $y = 6 + \ln x$ 

Since  $\lim_{x \rightarrow 0^+} 6 + \ln x = -\infty$ , then  $x=0$  is a V.A.  
i.e. the y-axis

$$3. \text{ Given } g(x) = \begin{cases} x-1 & x < 0 \\ x^2 & 0 < x \leq 3 \\ 3-x & x > 3 \end{cases}$$

Evaluate each of the following limits, if it exists

i)  $\lim_{x \rightarrow 0^+} g(x) = \lim_{x \rightarrow 0^+} x^2 = 0$

ii)  $\lim_{x \rightarrow 1} g(x) = \lim_{x \rightarrow 1} x^2 = 1$

$$\text{iii) } \lim_{x \rightarrow 3} g(x) : \left. \begin{array}{l} \lim_{x \rightarrow 3^+} g(x) = \lim_{x \rightarrow 3^+} (3-x) = 0 \\ \lim_{x \rightarrow 3^-} g(x) = \lim_{x \rightarrow 3^-} x^2 = 9 \end{array} \right\} \Rightarrow \lim_{x \rightarrow 3} g(x) \text{ DNE.}$$