

Victor - DATA Virtual Journal

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COMPUTER IMPLEMENTATION

① $F(x) = x$, find $\lim_{x \rightarrow 2} F(x)$

$$\lim_{x \rightarrow 2} F(x) = x$$

$$\lim_{x \rightarrow 2^+} F(x) = x$$

② $\lim_{x \rightarrow 6} F(x)$

$$x \rightarrow 6$$

$$\lim_{x \rightarrow 6} (3x - 21)$$

$$x \rightarrow 6$$

$F(x)$	$x - \Delta$	$x + \Delta$	$f(x)$
8.00	5.9	6.10	9.5
8.50	5.91	6.09	9.49
8.60	5.92	6.08	9.48
8.65	5.93	6.07	9.45
8.70	5.94	6.06	9.30
8.75	5.95	6.05	9.25
8.80	5.96	6.04	9.20
8.85	5.97	6.03	9.15
8.90	5.98	6.02	9.10
8.95	5.99	6.01	9.05
9.00	6.00	6.00	9.00

From the table $\lim_{x \rightarrow 6} (3x - 21)$ all tends toward 9

$$x \rightarrow 6$$

③ Find the limit of the model equation given in equation 3

$$\lim_{x \rightarrow 3^+} \frac{3x - x}{|3 - x|} = \lim_{x \rightarrow 3^+} \frac{3 - (3 + \Delta)}{|3 - (3 + \Delta)|} = \lim_{x \rightarrow 3^+} \frac{3 - 3 - \Delta}{|3 - 3 - \Delta|} = \frac{-\Delta}{|-\Delta|}$$

$$= \frac{-\Delta}{\Delta} = -1$$

④ Evaluate the limit of the model equation

$$\lim_{x \rightarrow 3} \frac{x - 3}{|x - 3|}$$

$$\lim_{x \rightarrow 3^+} \frac{x - 3}{|x - 3|} = \lim_{x \rightarrow 3^+} \frac{3 + \Delta - 3}{|3 + \Delta - 3|} = \frac{\Delta}{\Delta} = 1$$

$$\lim_{x \rightarrow 3^-} \frac{x - 3}{|x - 3|} = \lim_{x \rightarrow 3^-} \frac{3 - \Delta - 3}{|3 - \Delta - 3|} = \frac{-\Delta}{|-\Delta|} = \frac{-\Delta}{\Delta} = -1$$

⑤ Show that the function given in equation $f(x) = \sqrt{x-4}$ is continuous on the interval $(4, 9)$

$$f(x) = \sqrt{x-4}$$

$$\text{sub 4 for } x \quad f(4) = \sqrt{(4)-4} = \sqrt{0} = 0$$

$$\text{sub 8 for } x \quad f(8) = \sqrt{(8)-4} = \sqrt{4} = 2$$

x	f(x)
4	0
6	1.41
8	2

f is continuous.

