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DEPARTEMT: CHEMICAL ENGINEERING

MATRIC NO:17/ENG01/005

COURSE CODE: ENG 281

ASSIGNMENT

1. Given that a function to be as f(x)=π

 Find lim f(x)

 x 3

Solution

Lim f(x) = lim π

x 3 x 3

1. The model of a system has been developed by an engineer to be given in the equation.

 F(x)=5x-21

Given that δ=0.1, and using a step of 0.01, demonstrate in a tabular form of the model as x 6

is equal to a

Solution

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lm | a - δ | 6 | a + δ | Lm |
| 8.5 | 5.90 |  | 6.1 | 9.5 |
| 8.55 | 5.91 |  | 6.09 | 9.45 |
| 8.60 | 5.92 |  | 6.08 | 9.40 |
| 8.65 | 5.93 |  | 6.07 | 9.35 |
| 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 |

Since the right hand limit and left hand limit are equal to a therefore

$$\lim\_{x\to 6}\left(5x-21\right)=9$$

1. Find the limit of the model equation given as

 $\lim\_{x\to 3^{+}}\frac{3-x}{\left|3-x\right|}$

Solution

 $\lim\_{x\to 3^{+}}\frac{3-x}{\left|3-x\right|}$ = $\lim\_{8\to 0}\frac{3-(3-x)}{3-\left|3-x\right|}$

$\frac{3-3-x}{\left|3-3+x\right|}$ = $\frac{-8}{8}$ = -1

1. Evaluate the limit of the model given as $\lim\_{x\to 3}\frac{x-3}{(x-3)}$

Solution

$$\lim\_{x\to 3}\frac{x-3}{(x-3)}$$

=$\frac{3-3}{\left|3-3\right|}$

=$\frac{0}{0}$

= undefined

The unit does not exists

1. Show that the function given on the equation below is continuous on the interval [4 , 8]

Solution

|  |  |
| --- | --- |
| x | f(x) = $\sqrt{x-4}$ |
| 4 | 0 |
| 5 | 1 |
| 6 | 1.4 |
| 7 | 1.7 |
| 8 | 2.0 |



The graph above shows that the function f(x) = $\sqrt{x-4}$ at interval [4 , 8] is continuous because there was no point where the function was unidentified