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**DEPARTMENT: MECHANICAL ENGINEERING**

**LEVEL: 200**

**MATRIC NUMBER: 17/ENG06/041**

**COURSE: ENG 281; ENGINEERING MATHEMATICS**

1. F(x)=π lim x->3 =π

**=** =

As h0, = 1

= , =1

=

=

As h = h

= = 1

= =

= ,

= = -1

Therefore, 1

1. F(x) = at intervals [4,8]

=

=

=, as h

= 0 (i)

=, as h

From equations (i) and (ii), f(x) = f(4). Therefore, f(x) is continuous at 4.

And, =

= as h,

= = 2 (iii)

=

= as h = 2. (iv)

From equations (iii) and (iv),

f(x) = f(8). Thus, f(x) is continuous at 8

2.

|  |  |  |  |
| --- | --- | --- | --- |
| F(x) | x-b | X+b | F(x) |
| 8.50 | 5.90 | 6.10 | 9.50 |
| 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 |