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17/ENG06/099

MATHEMATICS ASSIGNMENT 7

Mechanical ENGINEERING.

**SOLUTION TO ASSIGNMENT**

**for all t=0 T= 3x2**

|  |  |
| --- | --- |
| **X(cm)** | **T** |
| 0 | 0 |
| 0.3 | 0.27 |
| 0.6 | 1.08 |
| 0.9 | 2.43 |
| 1.2 | 4.32 |
| 1.5 | 6.75 |
| 1.8 | 9.72 |
| 2.1 | 13.23 |
| 2.4 | 17.28 |
| 2.7 | 21.87 |
| 3 | 27 |
| 3.3 | 32.67 |
| 3.6 | 38.88 |
| 3.9 | 45.63 |
| 4.2 | 52.92 |
| 4.5 | 60.75 |
| 4.8 | 69.12 |
| 5.1 | 78.03 |
| 5.4 | 87.48 |
| 5.7 | 97.47 |
| 6 | 108 |

**FOR U(x,1)= U(x+1,1)= r\*U(x-1,0) + (1-2r)\*U(x,0) + r\*U(x+1,0)**

**Therefore in tabular form**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | TABLE OF VALUES FOR U(X,1) | | | | | | | | | | | | | | | | | | | |
| X | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| X-1 | 0 | 0 | 0.27 | 1.08 | 2.43 | 4.32 | 6.75 | 9.72 | 13.23 | 17.28 | 21.87 | 27 | 32.67 | 38.88 | 45.63 | 52.92 | 60.75 | 69.12 | 78.03 | 87.48 |
| X | 0 | 0.27 | 1.08 | 2.43 | 4.32 | 6.75 | 9.72 | 13.23 | 17.28 | 21.87 | 27 | 32.67 | 38.88 | 45.63 | 52.92 | 60.75 | 69.12 | 78.03 | 87.48 | 97.47 |
| X+1 | 0 | 1.08 | 2.43 | 4.32 | 6.75 | 9.72 | 13.23 | 17.28 | 21.87 | 27 | 32.67 | 38.88 | 45.63 | 52.92 | 60.75 | 69.12 | 78.03 | 87.48 | 97.47 | 108 |
| U(X,1) | 0 | 0.534 | 1.344 | 2.694 | 4.584 | 7.014 | 9.984 | 13.494 | 17.544 | 22.134 | 27.264 | 32.934 | 39.144 | 45.894 | 53.184 | 61.014 | 69.384 | 78.294 | 87.744 | 97.734 |