DATE : / 20
PAGE No

* Formula for divided difference :

$$F[x_0, \ldots, x_N] = \frac{F[x_1, \ldots x_N] - F[x_0, \ldots, x_{N-1}]}{x_N - x_0}$$

Using this formula :

| $x$ | $f(x)$ | $F[x_0, x_1]$ | $F[x_0, x_1, x_2]$ | $F[x_0 \ldots x_3]$ |
|---|---|---|---|---|
| 0 | 1 → | $\frac{7-1}{1-0} = 6$ → | $\frac{2-6}{4-0} = -1$ → | 0.0944 |
| 1 | 7 → | $\frac{13-7}{4-1} = 2$ → | $\frac{1.5-2}{10-1} = -0.0556$ | |
| 4 | 13 → | $\frac{22-13}{10-4} = 1.5$ | | |
| 10 | 22 | | | |

$\Rightarrow F[x_0] = 1, \quad F[x_0, x_1] = 6, \quad F[x_0, x_1, x_2] = -1,$

$F[x_0, x_1, x_2, x_3] = 0.0944.$