Let

$m = 2+1 = 3$

$n = 2-1 = 1$

Since $n \geq 1$

So we use $m = 5$ & $n = 3$ $\quad a = 0$

$f(x) = e^{(m-n)x}$

$f(x) = e^{2x}$

$f'(x) = 2e^{2x}$

$f''(x) = 4e^{2x}$

$f'''(x) = 8e^{2x}$

$f''''(x) = 16e^{2x}$

$f(x) = 5e^{x}$

$f'(x) = 5e^{5x}$

$f''(x) = 25e^{5x}$

$f'''(x) = 125e^{5x}$

$f''''(x) = 625e^{5x}$

$f(x) = e^{-3x}$

$f'(x) = -3e^{-3x}$

$f''(x) = 9e^{-3x}$

$f'''(x) = -27e^{-3x}$

$f''''(x) = 81e^{-3x}$

$$P_4(x) = f(0) + \frac{f'(0)(x-0)}{1!} + \frac{f''(0)(x-0)^2}{2!}$$

$$+ \frac{f'''(0)(x-0)^3}{3!} + \frac{f''''(0)(x-0)^4}{4!}$$

$$= 1 + 2x + 2x^2 + \frac{4x^3}{3} + \frac{2x^4}{3}$$

When $x = 0.05$

$$P_4(0.05) = 1 + 2(0.05) + 2(0.05)^2 + \frac{4}{3}(0.05)^3 + \frac{2}{3}(0.05)^4$$

$$= 1.105170833$$

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$n = 2-1 = 1$

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$= 1.105170833$

Exact value = 1.105170918

① Original Matrix $\begin{bmatrix} 92 & 18 & 71 & 15 \\ 29 & 76 & 81 & 51 \\ 6 & 86 & 69 & 92 \\ 95 & 30 & 4 & 67 \end{bmatrix}$

②

$$92\begin{bmatrix} 76 & 81 & 51 \\ 86 & 69 & 92 \\ 30 & 4 & 67 \end{bmatrix} - 20\begin{bmatrix} 29 & 81 & 51 \\ 6 & 69 & 92 \\ 95 & 4 & 67 \end{bmatrix} + 71\begin{bmatrix} 29 & 76 & 51 \\ 6 & 86 & 92 \\ 95 & 30 & 67 \end{bmatrix} - 15\begin{bmatrix} 29 & 76 & 81 \\ 6 & 86 & 69 \\ 95 & 30 & 4 \end{bmatrix}$$

$$76\begin{bmatrix} 69 & 92 \\ 4 & 67 \end{bmatrix} - 81\begin{bmatrix} 86 & 92 \\ 30 & 67 \end{bmatrix} + 51\begin{bmatrix} 86 & 69 \\ 30 & 4 \end{bmatrix}$$

$$= 76(4255) - 8(3002) + 51(-1726)$$

$$= 211338$$

$$29\begin{bmatrix} 69 & 92 \\ 4 & 67 \end{bmatrix} - 81\begin{bmatrix} 6 & 92 \\ 95 & 67 \end{bmatrix} + 71\begin{bmatrix} 6 & 69 \\ 95 & 4 \end{bmatrix}$$

$$= 123395 + 675376 - 333081$$

$$= 465692$$

$$29\begin{bmatrix} 86 & 92 \\ 30 & 67 \end{bmatrix} - 76\begin{bmatrix} 6 & 92 \\ 95 & 67 \end{bmatrix} + 51\begin{bmatrix} 6 & 86 \\ 95 & 30 \end{bmatrix}$$

$$= 87058 + 633688 - 407490$$

$$= 313256$$

$$29\begin{bmatrix} 86 & 69 \\ 30 & 4 \end{bmatrix} - 76\begin{bmatrix} 6 & 69 \\ 95 & 4 \end{bmatrix} + 81\begin{bmatrix} 6 & 89 \\ 95 & 4 \\ & 30 \end{bmatrix}$$

$$= -50054 + 496356 - 670275$$

$$= -223973$$

Det is

$$92(241338) - 20[465692] + 71[313256] - 15[-223973]$$

$$= 35730027$$

exact value = 1.105170918

① Original Matrix $\begin{bmatrix} 92 & 18 & 71 & 15 \\ 29 & 76 & 81 & 51 \\ 6 & 86 & 69 & 92 \\ 95 & 30 & 4 & 67 \end{bmatrix}$

②

$$92\begin{bmatrix} 76 & 81 & 51 \\ 86 & 69 & 92 \\ 30 & 4 & 67 \end{bmatrix} - 20\begin{bmatrix} 29 & 81 & 51 \\ 6 & 69 & 92 \\ 95 & 4 & 67 \end{bmatrix} + 71\begin{bmatrix} 29 & 76 & 51 \\ 6 & 86 & 92 \\ 95 & 30 & 67 \end{bmatrix} - 15\begin{bmatrix} 29 & 76 & 81 \\ 6 & 86 & 69 \\ 95 & 30 & 4 \end{bmatrix}$$

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$= 123395 + 675378 - 333091$

$= 465692$

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Det is

$92(211338) - 20[465692] + 71[313256] - 15[-223973]$

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