$$\text{Ea \% error} = \left[\frac{X_{n+1} - X_n}{X_{n+1}}\right] \times 100\%$$

$$= \left[\frac{0.838890606 - 0.5}{0.838890606}\right] \times 100$$

$$= 40.39747299$$

$$X_2 = 0.838890606 - \frac{e^{-0.5(0.838890606)}(4 - 0.838890606) - 2}{0.5e^{-0.5(0.838890606)}(0.838890606 - 4) - e^{-0.5(0.838890606)}}$$

$$= 0.884955980 9$$

$$\text{Ea} = \left[\frac{0.884955980 9 - 0.838890606}{0.884955980 9}\right] \times 100$$

$$= 5.205356019$$

$$X_3 = 0.884955980 9 - \frac{e^{-0.5(0.884955980 9)}(4 - 0.884955980 9) - 2}{0.5e^{-0.5(0.884955980 9)}(0.884955980 9 - 4) - e^{-0.5(0.884955980 9)}}$$

$$= 0.885708607 1$$

$$\text{Ea} = \left[\frac{0.885708607 1 - 0.884955980 9}{0.885708607}\right] \times 100$$

$$= 0.849744706 1$$

$$X_4 = 0.885708607 1 - \frac{e^{-0.5(0.885708607 1)}(4 - 0.885708607 1) - 2}{0.5e^{-0.5(0.885708607 1)}(0.885708607 1 - 4) - e^{-0.5(0.885708607 1)}}$$

$$= 0.885708802$$

$$\text{Ea} = \left[\frac{0.885708802 - 0.885708607 1}{0.885708802}\right] \times 100$$

$= 2.200497495 \times 10^{-5}$

$$X_b = 0.88708802 - e^{-0.5(0.88708802)}(1 - 0.88708802) - 2$$
$$0.5e^{-0.5(0.88708802)}(0.88708802 - 41) - e^{0.5(0.88708802)}$$

$= 0.88708802$

$$E_A = \left[\frac{0.88708802 - 0.88708802}{0.88708802}\right] \times 100$$

$= 0$

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$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$$

$f(x) = e^{-0.5x}(4-x) - 2$

$f'(x) = u = e^{-0.5x}$

$v = 4-x$

$$f'(x) = \frac{dy}{dx} = v\frac{du}{dx} + u\frac{dv}{dx}$$

$f'(x) = (4-x)(-0.5e^{-0.5x}) + e^{-0.5x}(-1)$

$f'(x) = 0.5e^{-(0.5x)}(x-4) - e^{-0.5x}$

$$x_{n+1} = x_n - \frac{e^{-0.5x}(4-x) - 2}{0.5e^{-0.5x}(x-4) - e^{-0.5x}}$$

i	x	F_x
0	0.5	0
1	0.838890606	40.39747299
2	0.884955981	5.205886019
3	0.885708607	0.089774474061
4	0.885708802	

$$x_{n+1} = \frac{0.5 - e^{-0.5(0.5)}(4-0.5) - 2}{e^{-0.5(0.5)}(0.5-4) - e^{0.5(0.5)}}$$

$= 0.838890606$