NDRN AH-AWO H ANJOJOH- NUYWAH.

16/ENG 04/055.

ELECT/ELECT.

ENG 382. ASSIGNMENT 2

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

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

from: $x_{i+1} = x_i - \frac{f(x_i)}{f'(x_i)}$

i	x	% error
0	0.5	—
1	0.83889	40.397
2	0.884456	5.2055
3	0.885709	0.0850

~~$x_1 = x_0 - e^{-x_0} - x_0$~~
~~$-e^{-}$~~

① $i = 1$

$$x_1 = x_0 - \frac{e^{-0.5x_0}(4-x_0) - 2}{-(0.5e^{-0.5x_0}(4-x_0) + e^{-0.5x_0})}$$

$$x_1 = 0.5 - \frac{e^{-0.5\times0.5}(4-0.5) - 2}{-0.5e^{-0.5\times0.5}(4-0.5) + e^{-0.5\times0.5}}$$

$x_1 = 0.83889$

② $i = 2$.

$$x_2 = x_1 - \frac{e^{-0.5x_1}(4-x_1) - 2}{-(0.5e^{-0.5x_1}(4-x_1) + e^{-0.5x_1})}$$

$x_2 \Rightarrow 0.884456$

③ $i = 3$

$$x_3 = x_2 - \frac{e^{-0.5x_2}(4-x_2) - 2}{-(0.5e^{-0.5x_2}(4-x_2) + e^{-0.5x_2})}$$

$x_3 \Rightarrow 0.885709$

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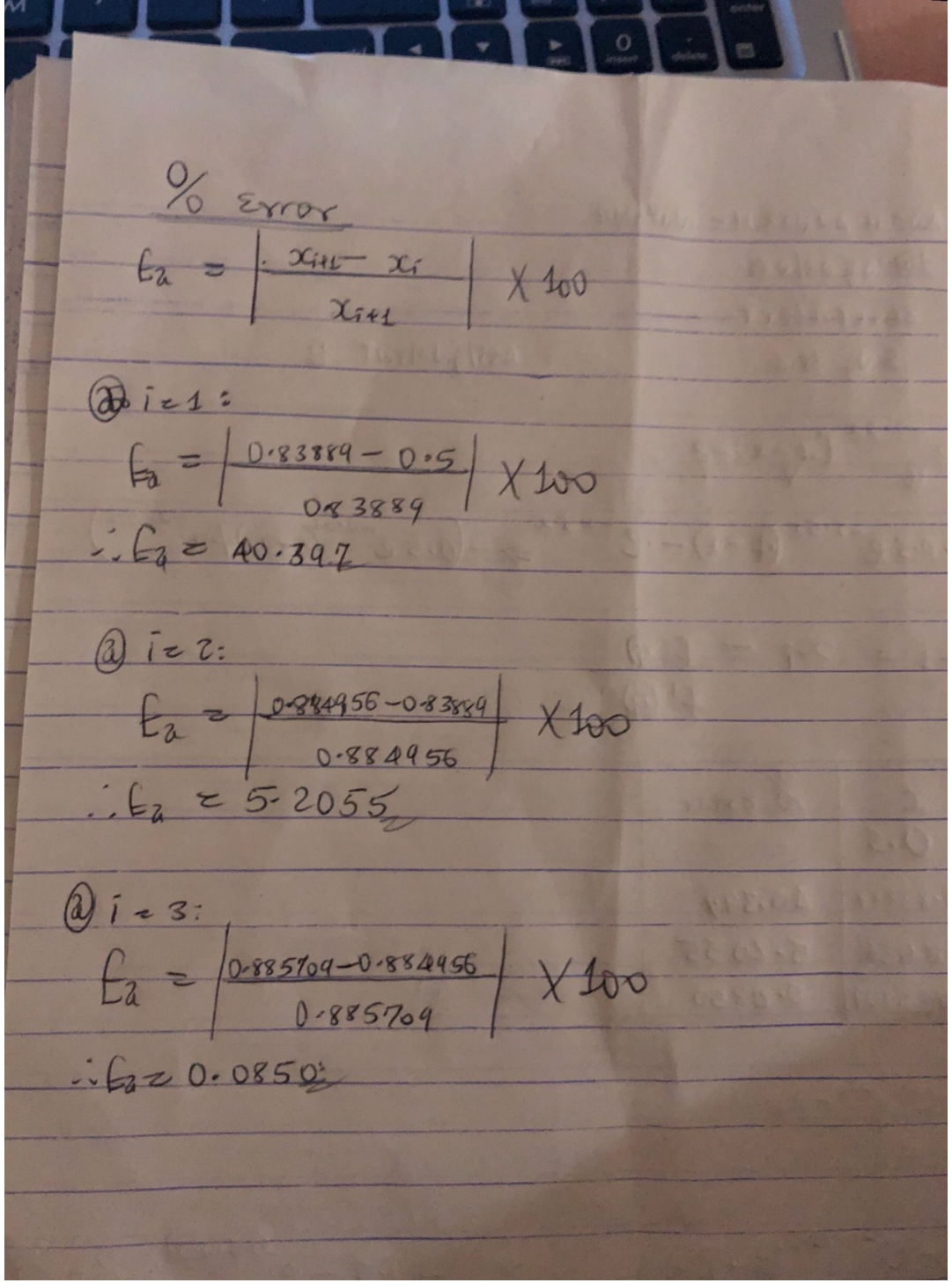

% Error

$$\varepsilon_a = \left| \frac{x_{i+1} - x_i}{x_{i+1}} \right| \times 100$$

(a) i = 1 :

$$\varepsilon_a = \left| \frac{0.83889 - 0.5}{0.83889} \right| \times 100$$

$\therefore \varepsilon_a = 40.397$

(a) i = 2 :

$$\varepsilon_a = \left| \frac{0.884956 - 0.83889}{0.884956} \right| \times 100$$

$\therefore \varepsilon_a = 5.2055$

(a) i = 3 :

$$\varepsilon_a = \left| \frac{0.885709 - 0.884956}{0.885709} \right| \times 100$$

$\therefore \varepsilon_a = 0.0850$

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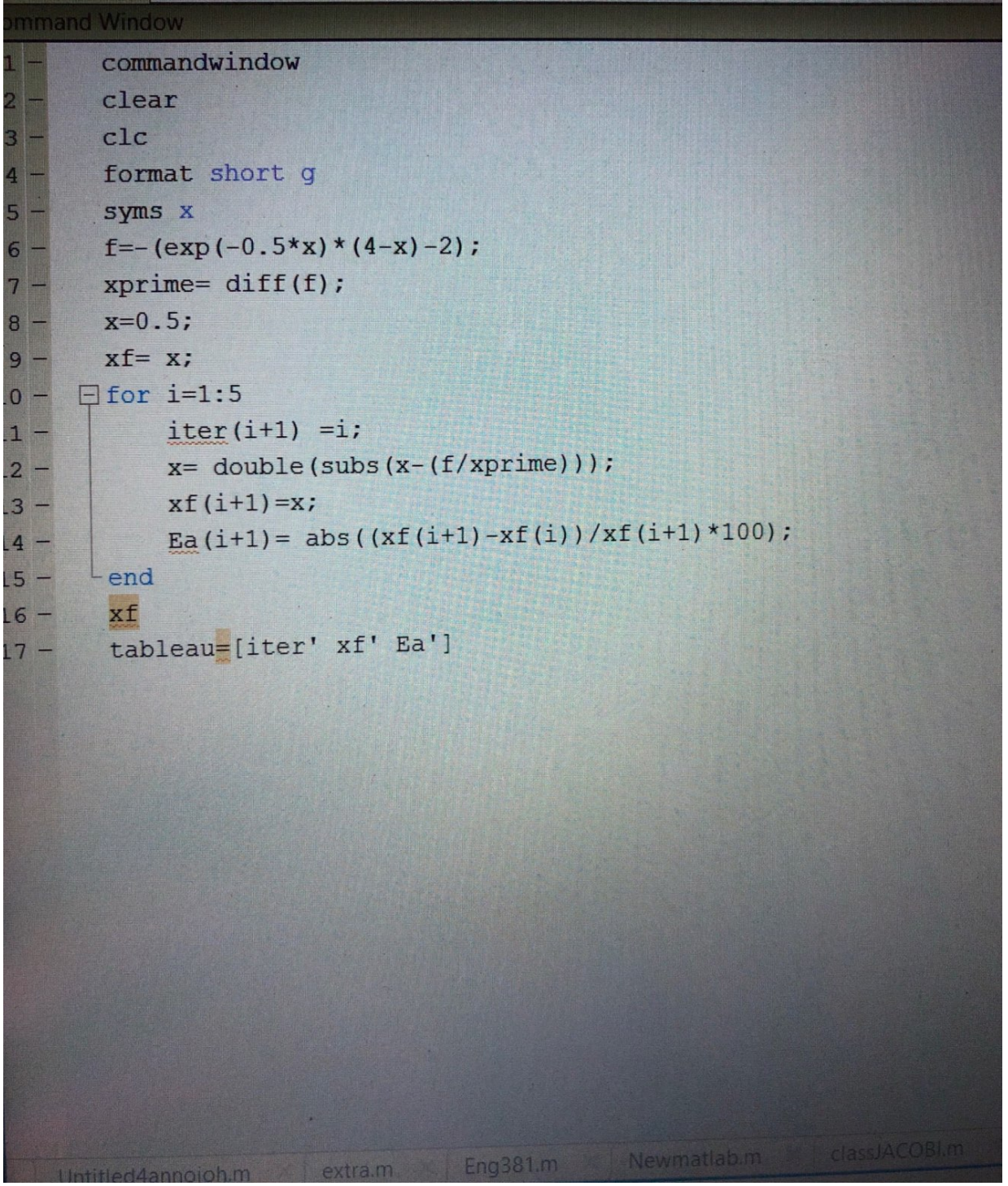

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Command Window

```
xf =

    0.5    0.83889    0.88496    0.88571    0.88571    0.88571


tableau =

         0         0.5           0
         1     0.83889      40.397
         2     0.88496      5.2054
         3     0.88571    0.084972
         4     0.88571   2.2247e-05
         5     0.88571   1.5293e-12

fx >>
```

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