"On my honor, I have neither given nor received any unauthorized and/or inappropriate assistance for all sessions of this exam. The work done on this exam is totally my own. I understand that by the school code, violation of these principles will lead to a zero grade and is subject to harsh discipline issues."

Hüseyin Kerem Mican
150119629

[signature]

Q_1	/25
Q_2	/25
Q_3	/25
Q_4	/25
Total	/100

Q_1) i) Answer : (d) 100101

ii) Answer : (c) 7 3 4

iii) Answer : (b) 1 4 6

iv) Answer : (a) x(x>2) output is 7 3 4

v) Answer ; linspace(4, 35, 6)

t = 4 : 6 : 35
↑ start, ↓ end

Q_2) i) (a) one cannot always find exact solutions.

ii) (c) Either no root or even number of roots lie in [a,b]

iii) Round-off : Round-off error happens because computers can only represent numbers, which has a finite number of digits. like> $(1+10^7)-10^7=0$

Truncation error : In numerical methods we use approximations to represent exact mathematical operations. That's why truncation error happens.

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iv) Machine Epsilon: Machine epsilon is the minimum distance between two numbers. (its about floating-point) $\varepsilon_m > 0$ $1 + a = 1$ $|a| < \varepsilon_m$

v) Substractive cancellation: Substractive cancellation is the loss of some significant digits when we doing a floating point computation. It is an cancellation error.