

University of Bahrain
Bahrain Teachers College
TC2MA324: History of Mathematics
Dr. Abdulla Eid
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Quiz 4

Name: _____

1. (5 points) (a) Find the number of possible positive and negative roots of the following equation using the rule of signs technique by Descartes.

$$x^4 + x^3 - 3x^2 + 6x - 1 = 0.$$

- (b) Using Newton–Raphson method, approximate a positive root of the above equation using initial value of $x_0 = 2$.

2. (4 points) Consider the function $y = x \sin x$.
(a) Find the derivative of y using Leibniz rule.

- (b) Using Newton–Raphson method, approximate a root of the equation

$$x \sin x = \frac{\pi}{2}$$

using $x_0 = 2$. (*Set your calculator to work with radian*)

3. (4 points) (a) Define the Euler–phi function $\phi(n)$.

(b) Find the Euler–phi function of the following numbers. (*Show your work*)

(1) 17 (2) 33 (3) 87 (4) 26 (5) 105 (6) 29400