

Numerical Methods Problem Set 5
Due 3/6/2011

1. Find the real roots of

$$x^4 - 3.0x^3 + 3.37x^2 - 1.680x + 0.3136 = 0$$

2. How many solutions will the equation pair

$$y = \frac{1}{x^2 + 1} - \epsilon$$

$$2y = e^{-(x-1)}$$

have for various values of ϵ ? Find the critical values, together with their corresponding roots.

3. (Extra Credit)

Solve

$$x^4 + 4y^4 = 6$$

$$x^2y = 1.6787$$

first as a two-dimensional problem. Then eliminate y and solve as a one-dimensional problem. Compare your relative difficulties.