

**MATH 413**  
**Fall 2007**  
**Lab1**

**Exercise Set 1.2**

**Exercise 1**

(4 pt)

Plot the following equations (for example using Maple) and show that they have at least one solution in the given interval.

1.  $x \cos(x) - 2x^2 + 3x - 1 = 0$  in the intervals  $[0.2, 0.3]$  and  $[1.2, 1.3]$
2.  $(x - 2)^2 - \ln(x) = 0$  in the intervals  $[1, 2]$  and  $[e, 4]$

**Exercise 2**

(6 pt)

Find  $\max_{a \leq x \leq b} |f(x)|$  for the following functions and intervals.

1.  $f(x) = \frac{2 - e^x + 2x}{3}$  in the interval  $[0, 1]$
2.  $f(x) = 1 + e^{-\cos(x-1)}$  in the interval  $[1, 2]$