

Math 151A Homework #3

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Problem 0.1.

(a)

$$g(x) = \frac{1}{2} \left(x + \frac{a}{x} \right)$$
$$g(\sqrt{a}) = \frac{1}{2} \left(\sqrt{a} + \frac{a}{\sqrt{a}} \right) = \frac{1}{2} (\sqrt{a} + \sqrt{a}) = \sqrt{a}$$

(b)

Problem 0.2.

(a) $f(x) = e^x - 1 - x - x^2/2 = x^3/6 + x^4/24 + x^5/120 + \dots$

(b)

(c)

Problem 0.3.

Problem 0.4.

(a)

(b)

(c)

Problem 0.5.

For HW3 pb5 it asks to use MATLAB to construct the Lagrange polynomial. For this problem you should use the definition we gave last week (not Neville's method or Divided Differences that we will cover this week).

To get full credit you can either

1) write a code that given points and a degree builds the LP (for part a)), then evaluate it at a point (for part b))

OR

2) just compute by hand a formula for the LP for this problem (for part a)) then use MATLAB to evaluate it a point (for part b))

(a)

(b)