

4040-849 OPTIMIZATION METHODS

WRITTEN ASSIGNMENT 2

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PROBLEM 1-a.

Solution.

TODO: show steps in the reduction here

PROBLEM 1-b.

Solution.

$$f'(x) = -f(x) = -\frac{0.5}{\sqrt{1+x^2}} + \sqrt{1+x^2} \left(1 - \frac{0.5}{1+x^2}\right) - x$$

J	A	B	L_1	L_2^*
4	5	6		
7	8	9		

PROBLEM 1-c.

Solution.

$$f(x) = \frac{0.5}{\sqrt{1+x^2}} - \sqrt{1+x^2} \left(1 - \frac{0.5}{1+x^2}\right) + x$$

$$f'(x) = \frac{x(-x^2 - 2.)}{(x^2 + 1)^{3/2}} + 1$$

$$f''(x) = \frac{x^2 - 2.}{\sqrt{x^2 + 1} (x^2 + 1.)^2}$$

PROBLEM 1-d.

Solution.