

Name \_\_\_\_\_

MATH-1951

Quiz 5 - (3.5,3.8)

Answer the following questions, and show your work. Answers need not be simplified.

Scientific calculator only.

[1] (5 points total)

a) (4 points) Find  $dy/dx$  by implicit differentiation.

$$\sqrt{xy} + y = 1$$

b) (1 point) Use your answer to part a) to find the slope of the tangent at  $x = 1/2$ ,  $y = 1/2$ .

[2] (5 points total) The half-life of cesium-137 is 30 years. Suppose we have 100-mg sample.

a) (2.5 points) Find a formula for the mass remaining after  $t$  years.

b) (1 point) How much of the sample will remain after 100 years? Answer need not be simplified.

c) (1.5 points) After how long will only 1 mg remain? Answer need not be simplified.