

# Math 131 - Quiz 8

March 29, 2023

Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary.

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1. (3 points) Find the linearization of  $f(x) = \sqrt{x}$  at  $x = 9$ . Then use your linearization to approximate  $\sqrt{9.06}$ .
2. (3 points) Use a linearization to approximate  $(0.99)^\pi$ .
3. (2 points) Let  $y = e^{-2x}$ . Use differentials to approximate  $\Delta y$  as  $x$  changes from  $x = 0$  to  $x = 0.12$ .
4. (2 points) Suppose that  $x$  and  $y$  are differentiable functions of  $t$  and that  $y = 4x^2$ . Find  $dx/dt$  when  $x = 2$  if  $dy/dt = 3$ .