

MAT 125-Final Exam (part 2) -FALL 2017

NAME:

TA NAME:

*Each numbered question is worth 20% of the exam.

1. Find and draw f if $f'(x) = 5 - 4x - x^2$ and $f(0) = 2$.

2) A rectangle has its base on the x axis and its upper two vertices on the the parabola $y = 27 - x^2$.
What is the largest area the rectangle can have?

3) Determine the following limits or explain why they do not exist if $f(x) = \frac{e^x}{x}$

$$a) \lim_{x \rightarrow 0} f(x)$$

$$b) \lim_{x \rightarrow -\infty} f(x)$$

$$c) \lim_{x \rightarrow \infty} \sin(f(x))$$

4) A boy at the top of a cliff 299 ft.high throws a rock straight down, and it hits the ground 3.25 seconds later. With what speed does the boy throw the rock? The gravitational constant is -32 ft/s^2 .

5) Graph the following on a scaled set of axes. Label all critical points and any asymptotes. (Inflection points are not required.)

$$y = \frac{1}{x + x^2}$$