

MAT 126- Sample Exam 1-Spring 2018

NAME: _____

TA NAME: _____

*Each numbered question is worth 20 points.

1. For all parts in question #1 $f'(x) = |x + 2| - 3$

a.) Sketch a graph of f' .

b) Write an expression in sigma notation that represents the area under f' from $x = 1$ to $x = 5$.

c) Find the exact value of the area under f' from $x = 1$ to $x = 5$.

d) Sketch a graph of f if $f(-2) = 0$.

2. Draw $y = F(x) = \int_0^x (1 + \sqrt{16 - t^2}) dt$ with correct concavity on a scaled set of axes. (Include at least 3 labeled points.)

3. Use a left Riemann estimate with 2 subintervals to approximate the area between $\frac{dy}{dx} = 2^x$ and the x axis from $x = -1$ to $x = 5$. Now use this value to sketch $y = f(x)$ if $f(-1) = 2$

4) Compute the following for $f(x) = 2 \cos x - x$

$$a) \int_{-\frac{\pi}{2}}^{\frac{3\pi}{2}} f(x) dx$$

$$b) \int_{2\pi}^0 f(x) dx$$

$$c) \lim_{n \rightarrow \infty} \frac{4\pi}{n} \sum_{i=1}^n f(x_i)$$

5. Using a right Riemann sum, compute the following using limits:

$$\int_2^5 (x^2 + x) dx$$