MAT 126-Exam 2-Spring 2018

NAME:_____

TA NAME:_____

*Each numbered question is worth 20 points.

1. For all parts in question #1 $f'(x) = x\sqrt{9 - x^2}$

a.) Find a general formula for f.

b) Find the exact area under f' from $x = 0$ to $x = 3$.

c) Find a formula for f if $f(-3) = 2$

d) Use integration by u substitution to find an antiderivative of f or show why this is not possible.

2. For which values of p does $y = \frac{1}{x^p}$ have a finite area under the curve for $x \geq 2$? Prove your answer.

3. Find all antiderivatives of $y = \tan 2x + x\sqrt{x-1} - e^{-x}$

4) Compute the following or show divergence for $f(x) = \frac{1}{x}$

$$a) \int_{-\infty}^{-2} f(x)dx$$

$$b) \int_{1}^{0} f(x)dx$$

$$c) \int_{-3}^{3} f(x)dx$$

5.Find the exact value of the following:

$$\int_{-\infty}^{\infty} \frac{x}{1 + x^4} dx$$