

MAT 126-SAMPLE Exam 2-Spring 2018

NAME: _____

TA NAME: _____

*Each numbered question is worth 20 points.

1. For all parts in question #1 $f'(x) = \frac{x^2}{1+x^6}$

a.) Find a general formula for f .

b) Find the exact area under f' from $x = 0$ to $x = 1$.

c) Find a formula for f if $f(-1) = 2$

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 $y = \frac{1}{x(\ln x)^p}$ have a finite area under the curve for $x \geq 2$? Prove your answer.

3. Find all antiderivatives of $y = \cot 3x + x\sqrt{3x+1} - 7e^{-4x}$

4) Compute the following or show divergence for $f(x) = \frac{1}{x^2}$

$$a) \int_{-\infty}^{-1} f(x) dx$$

$$b) \int_3^0 f(x) dx$$

$$c) \int_{-1}^{12} f(x) dx$$

5. Find the exact value of the following or show divergence:

$$\int_0^{\infty} \frac{\ln x}{x} dx$$