

## Math 107 Practice Exam 2

1a.(10pts) Find the length of the curve  $y = \frac{1}{3}(x^2 + 2)^{\frac{3}{2}}$  from  $x = 0$  to  $x = 1$ .

b.(10pts) Find the surface area of the surface of revolution obtained by revolving  $y = \frac{1}{3}x^3$  about the x axis from  $x = 0$  to  $x = 1$ .

2. Let  $p(x) = c\sqrt{x}$  on  $[0, 1]$ .

a.(8pts) Choose  $c$  so that  $p(x)$  is a probability distribution.

b.(8pts) Find the mean of the distribution.

c.(9pts) Find the median of the distribution.

3.(15pts) Evaluate the improper integral using the definition:

$$\int_e^{\infty} \frac{dx}{x(\ln x)^2}$$

4a.(7pts) State the trapezoid rule for approximating  $\int_a^b f(x) dx$  with  $n$  partitions of equal size.

b.(8pts) Use the trapezoid rule to approximate  $\ln 2$  with 5 partitions.

5.(10pts) Suppose that troubled S&L's are failing at the rate of 5% per year. How long will the average S&L last?

6. The mean lifespan of a certain brand of tire is 30,000 miles with a standard deviation of 2000 miles, and is normally distributed.

a.(10pts) What percentage of tires will last between 25000 and 28000 miles?

b.(5 pts) Find the probability that a tire will last more than 36000 miles.

Z	Area from 0 to Z
0	0.0000
0.5	0.1915
1.0	0.3413
1.5	0.4332
2.0	0.4772
2.5	0.4938
3	0.4987