

MATH 6 – PRACTICE MIDTERM 1

Name: _____

FOR FULL CREDIT

SHOW ALL WORK

NO CALCULATORS

1. Find the area under the curve defined by $y = \sqrt[3]{x+1}$ from $x = 0$ to $x = 7$.

2. Compute the indefinite integral:

$$\int \frac{1}{(2\sqrt{x})^3} dx$$

3. Compute the following definite integral:

$$\int_1^2 \frac{e^{1/x}}{x^2} dx$$

4. Estimate the area under the curve defined by $y = e^{(x^2)}$ from $x = 0$ to $x = 2$ using **four** rectangles. You may use right or left endpoints.

5. A particle has velocity given by $v(t) = t^3 + 2t + 3$. At time $t = 0$, it is at position $y = 1$. Find a formula giving the position $y(t)$ of the particle.

6. Define $F(x) = \int_0^x \frac{t}{t^4 + 1} dt$.

(a) What is $F'(x)$?

(b) At what values of x could $F(x)$ have maxima, minima, and points of inflection?

(c) Is $F(1)$ positive, negative or zero?