

Math 131 - Quiz 11

April 24, 2023

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (6 points) Evaluate each indefinite integral.

(a) $\int (x^2 + x + 1) dx$

$$= \frac{1}{3}x^3 + \frac{1}{2}x^2 + x + C$$

(b) $\int (3 \sin x - 5 \cos x) dx$

$$= -3 \cos x - 5 \sin x + C$$

(c) $\int \left(\frac{3}{x} - e^x \right) dx$

$$= 3 \ln |x| - e^x + C$$

2. (4 points) Let $f(x) = \frac{1}{x}$. Use 4 subintervals of equal length and subinterval right endpoints to compute the corresponding Riemann sum for f over the interval $[1, 3]$.

$$\Delta x = \frac{3-1}{4} = 0.5$$

$$1 < 1.5 < 2 < 2.5 < 3$$

↑ ↑ ↑ ↑
c₁ c₂ c₃ c₄

$$\text{RIEMANN SUM} = f(1.5) \Delta x + f(2) \Delta x + f(2.5) \Delta x + f(3) \Delta x$$

$$= \frac{1}{1.5} \cdot 0.5 + \frac{1}{2} \cdot 0.5 + \frac{1}{2.5} \cdot 0.5 + \frac{1}{3} \cdot 0.5$$

$$= 0.95$$