

Test 1

Calculus II
MATH 129February 5, 2019
Dr. Abdul-Rahman

Name: _____

Signature: _____

Show all your work!

1. [30 points] Find the following integrals

(a) $\int x^3 \ln(x) dx$

(b) $\int \frac{\ln((\ln x)^3)}{x} dx$

(c) $\int \sin \theta \cos^3 \theta d\theta$

2. [30 points] Find the following integrals

(a) $\int \frac{1}{x^2 + 8x + 15} dx$

(b) $\int \frac{2x^2 - x - 1}{(x^2 + 1)(x - 2)} dx$

3. [20 points] Find the following integral

$$\int \frac{1}{x\sqrt{9-4x^2}} dx.$$

4. [10 points] Evaluate the following improper integrals

$$\int_0^{\infty} \frac{1}{1+x^2} dx.$$

5. [10 points] Order the following approximations to the integral $\int_a^b f(x) dx$ and its exact value from smallest to greatest, **EXPLAIN**:

LEFT(n), RIGHT(n), MID(n), TRAP(n), $\int_a^b f(x) dx$.

