

This exam should have 18 questions. Part I will have 16 multiple choice questions , 5 points each . Part II will have 2 hand graded questions , 10 points each . Please check to see that your exam is complete. If you do not have a PENCIL to mark your card, please ask to borrow one from your proctor.

Write your ID number (not your SS number) on the six blank lines at the top of your answer card, using one blank for each digit. **Shade in the corresponding boxes below.** Also print your name at the top of your card . If your card becomes damaged please ask your proctor for a new one.

You may only use a **scientific calculator** (not one with graphing). You may bring with you a 3x5 card with any data on it, together with the trigonometry info. found on the syllabus.

PART I : (80 points)

1. Given that $\frac{dy}{dx} = \frac{1}{2}e^{2x} + \frac{1}{2}$ and that $y(0) = 1$, find $y(1)$.

A) $\frac{2}{3}e^{\frac{1}{2}} + \frac{1}{3}$ B) $\frac{2e^2+3}{4}$ C) $\frac{1}{2}e^2 + \frac{2}{3}$ D) $\frac{e^2-8}{3}$ E) $\frac{2}{6}e^3 + \frac{1}{3}$

F) $\frac{1}{2}e^3 + 2$ G) $\frac{e^2+5}{4}$ H) $\frac{1}{5}e^2 + \frac{3}{2}$ I) $\frac{e^3+6}{4}$ J) $\frac{1}{2}e^3 + \frac{1}{2}$

2. Approximate the **area** under the curve $y = \frac{1}{x}$, $1 \leq x \leq 3$, using the **left** point Riemann sum with $n = 4$.

- A) 1.0986
- B) 1.1136
- C) 1.1478
- D) 1.1665
- E) 1.1879
- F) 1.2135
- G) 1.2472
- H) 1.2651
- I) 1.2833
- J) 1.3091

3) For $y = \int_1^{x^3} \sqrt[3]{t} dt$, find the value of $\frac{dy}{dx}$ at $x = 2$.

- A) 12
- B) 24
- C) 32
- D) 44
- E) 15
- F) 36
- G) 47
- H) 28
- I) 39
- J) 33

4. Evaluate $\int_0^{\ln(2)} e^{3x} dx$.

A) $\frac{2}{3}$

B) $\frac{4}{3}$

C) $\frac{5}{4}$

D) $\frac{3}{4}$

E) $\frac{7}{3}$

F) $\frac{4}{3}$

G) $\frac{9}{5}$

H) $\frac{7}{4}$

I) $\frac{9}{2}$

J) $\frac{9}{4}$

5) Evaluate $\int_0^a x \sqrt{a^2 - x^2} dx$ using the substitution $u = a^2 - x^2$ (a is some constant).

A) 0

B) a

C) a^2

D) a^3

E) $a/2$

F) $a^2/3$

G) $a^3/3$

H) $a^4/5$

I) $a^2 - a$