

Name _____

Student number _____

Quiz section: _____

Problem	Total Points	Score
1	14	
2	12	
3	10	
4	14	
5	10	
Total	60	

Instructions

1. Print your name, student ID number and section number on this page. Do **NOT** separate the pages of the exam.
2. Print your name on each page of the exam as you check to see that your copy of the exam has 6 pages.
3. **SHOW ALL OF YOUR WORK.** Partial credit will only be given where you have made it clear that you understand part of the solution. Answers without justification may not receive full credit. All answers must be put in the answer box provided .
4. You may use one sheet (two-sided) of handwritten notes and a basic scientific calculator. Other notes, books or a graphing calculator are not allowed. If you need more space to solve a problem, use the back of the page preceding that problem.
5. Read each question carefully. Work the problems in an order that will maximize your score. Good Luck!

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1. Evaluate the following:

(a) (5 points) $\int \frac{e^{2\sqrt{x}}}{\sqrt{x}} dx$.

(2) (5 points) $\int (\sin x)^3 dx$.

(c) (4 points) Find the derivative of $\int_0^{(\cos x)^2} \frac{1-\sqrt{t}}{(1+\sqrt{t})^2} dt$.

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2(a). (7 points) Express the limit as a definite integral then evaluate:

$$\lim_{n \rightarrow \infty} \sum_{k=1}^n \frac{\pi}{4n} \tan \frac{k\pi}{4n}.$$

2(b). (5 points) Evaluate $\int_1^2 x\sqrt{2x-1}dx$.

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3. (10 points) Using the Midpoint Rule with $n = 4$ to approximate the area of the region bounded above by $y = \sqrt{x^2 + 1}$ and bounded below by $y = 1 - x^2$ for $0 \leq x \leq 1$.

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4. Consider the region R bounded by the curves $y = x^2$, $y = 2 - x$.

(a) (7 points) Find the area of R .

(b) (7 points) Find the volume of the solid obtained by rotating the region R in (a) about the line $y = -2$.

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5. (10 points) Susan stands at the top of a cliff and she throws a ball upward. The ball is 512 ft above the ground when it left Susan's hand. The maximum height that the ball reached is 576 ft above the ground. How long does it take for the ball to land on the ground. (Recall that the acceleration due to gravity is -32 ft/sec^2 and the air resistance is neglected.)