Guidelines

- **Calculators are not allowed.**

- Read the questions carefully. You have 50 minutes; use your time wisely.

- You may leave your answers in symbolic form, like $\sqrt{3}$ or $\ln(2)$, unless they simplify further like $\sqrt{9} = 3$ or $\cos(3\pi/4) = -\sqrt{2}/2$.

- Put a box around your final answers when relevant.

- Show all steps in your solutions and make your reasoning clear. Answers with no explanation will not receive full credit, even when correct.

- Use the space provided. If necessary, write âĂIJsee other sideâĂİ and continue working on the back of the same page.

- Hint: $\cos^2 x = \dfrac{1}{2}(1 + \cos(2x))$ and $\sin^2 x = \dfrac{1}{2}(1 - \cos(2x))$

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1. (8 points) To be completed once exams are graded and returned. Please correct any problem with points deducted. All corrections should be completed neatly on a separate sheet of paper. Once you have finished your corrections, take your exam and corrections to the Office of Student Learning (OSL), and a tutor will check your answers and sign below. The checked solutions should be given to your instructor.

   Signature: _____

   Print Name: _____

   Date: _____

Question	Points	Score
1	8	
2	60	
3	8	
4	12	
5	12	
Total:	100	

2. Evaluate each of the following:

a. (4 points) $\int \left(3\sqrt[3]{x} - \dfrac{2}{x^2}\right) dx$

b. (4 points) $\int \left(e^{-x} + \dfrac{1}{4x}\right) dx$

c. (4 points) $\int \left(\sec^2(3x) + \sec(\pi x)\tan(\pi x)\right) dx$

d. (4 points) $\int \dfrac{x + 2\sqrt{x}}{\sqrt{x}} dx$

e. (4 points) $\int \dfrac{1}{\sqrt{1 - 4x^2}} dx$

f. (6 points) $\int_0^1 x^2(\sqrt{x} + 1) dx$

g. (6 points) $\int 2x\sqrt{2 + 3x^2}\, dx$

h. (6 points) $\displaystyle\int x^7 \sin(x^8)\, dx$

i. (6 points) $\displaystyle\int \frac{1}{5 + 2x}\, dx$

j. (8 points) $\displaystyle\int_0^2 \frac{x^2}{\sqrt{4 + 4x^3}}\, dx$

k. (8 points) $\displaystyle\int_0^{\pi/4} \frac{\sin x}{\cos^3 x}\, dx$

3. (8 points) Find $\dfrac{d}{dx} \displaystyle\int_{x^2}^0 \sin(t^2)\, dt$

4. Suppose $\int_{-4}^{4} f(x)\, dx = 6$, and $\int_{0}^{4} g(x)\, dx = 10$. Furthermore, suppose that f is an even function and g is an odd function. Evaluate the following integrals

    a. (4 points) Find $\int_{0}^{4} f(x)\, dx$.

    b. (4 points) Find $\int_{-4}^{4} 7g(x)\, dx$

    c. (4 points) $\int_{0}^{2} 2xg(x^2)\, dx$

5. Given $f(x) = 2x - x^2$ on $[0, 3]$

    a. (6 points) Find the net area of the region bounded by f and x-axis on the given interval.

    b. (6 points) Find the area of the region bounded by f and x-axis on the given interval.