

Name: _____
Student ID: _____

Test 2

This test is graded out of 44 marks. No books, notes, graphing calculators or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. (5 marks) Evaluate the integral.

$$\int x \sin(x^2) e^{\cos x^2} dx$$

Question 2. (5 marks) Evaluate the integral.

$$\int_{\sqrt[3]{5\pi/6}}^{\sqrt[3]{3\pi/4}} x^2 \sec(\pi - x^3) \tan(\pi - x^3) dx$$

Question 3. (5 marks) Evaluate the integral.

$$\int x^2 e^{3x} dx$$

Question 4. (5 marks) Evaluate the integral.

$$\int_0^1 \arctan x dx$$

Question 5. (5 marks) Evaluate the integral.

$$\int_0^{\pi/4} \frac{\sin^3 x}{\sqrt{\cos x}} dx$$

Question 6. (5 marks) Evaluate the integral.

$$\int \sec^4 \theta \tan^{10} \theta d\theta$$

Question 7. (5 marks) Evaluate the integral.

$$\int \sqrt{4 - 9x^2} \, dx$$

Question 8. (5 marks) Evaluate the integral.

$$\int \frac{-x^2 + 3x + 5}{x^3 + 5x} dx$$

Question 9. (2 marks each) True or False. Explain your reasoning.

a.

$$\int_{-\sqrt{2}}^{\sqrt{2}} x \tan^2 x \, dx = 0$$

b. If $\int_0^4 f(x) \, dx = 3$ then $\int_0^2 xf(x^2) \, dx = \frac{3}{2}$.

Bonus Question. (3 marks)

Evaluate the integral.

$$\int \csc^3 x \, dx$$