Math 2300 **Name:** _____
Spring 2026
Quiz 2

1. (2 points) Which of the following is the result of a valid u-substitution for the following integral?

$$\int_0^{\pi/6} \sin^3(x)\cos^4(x)\,dx$$

(a) $\displaystyle\int_1^{\sqrt{3}/2} \left(u^6 - u^4\right) du$

(b) $\displaystyle\int_0^{1/2} u^3\left(1-u^2\right)^2 du$

(c) $\displaystyle\int_1^{\sqrt{3}/2} u^4(1-u)^2\,du$

(d) $\displaystyle\int_0^{\sqrt{3}/2} u^3\left(1-u^4\right) du$

(e) $\displaystyle\int_0^{\pi/6} u^3u^4\,du$

2. (2 points) Which of the following is the result of a valid u-substitution for the following integral?

$$\int_0^{\pi/4} \sec^4(x)\tan^4(x)\,dx$$

(a) $\displaystyle\int_0^1 u^4\left(1+u^2\right) du$

(b) $\displaystyle\int_0^1 u^4\left(1-u^2\right) du$

(c) $\displaystyle\int_0^1 u^3\left(1+u^2\right) du$

(d) $\displaystyle\int_1^{\sqrt{2}} \left(u^2-1\right)^2 du$

(e) $\displaystyle\int_0^{\pi/4} u^4u^2\,du$

3. (2 points) Which substitution is appropriate for computing the following integral?

$$\int \frac{\sqrt{x^2+16}}{x^2}\,dx$$

(a) $x = 4\sec\theta$

(b) $x = 4\tan\theta$

(c) $x = 4\sin\theta$

(d) $x = 4\csc\theta$

(e) $x = 16\sec\theta$

4. (4 points) Compute the following indefinite integral.

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