Math 102 Major Quiz 3

Name: **ID#** **Section#** **Serial#**

Question 1:

The value of the integral $\int_0^{\pi/4} 6 \tan x \sec^6 x \, dx$ is

(a) 7

(b) 10

(c) $\frac{56}{5}$

(d) $\frac{9}{2}$

(e) 8

Question 2:

$$\int_0^1 \frac{dx}{(x^2+1)^2} =$$

(a) $\frac{\pi}{8} + \frac{1}{4}$

(b) $\frac{\pi}{4}$

(c) $\frac{\pi}{2} + \frac{1}{3}$

(d) $\frac{\pi}{5}$

(e) 2π

Question 3: $\int \frac{x^2}{\sqrt{16-x^2}}\,dx =$

(a) $8\sin^{-1}\left(\frac{x}{4}\right) - \frac{x}{2}\sqrt{16-x^2} + C$

(b) $4\sin^{-1}\left(\frac{x}{4}\right) - x\sqrt{16-x^2} + C$

(c) $8\sin^{-1}(4x) - \frac{x}{2}\sqrt{16-x^2} + C$

(d) $16\sin^{-1}\left(\frac{x}{4}\right) + \frac{x}{2}\sqrt{16-x^2} + C$

(e) $2\sin^{-1}(4x) - 4x\sqrt{16-x^2} + C$

Question 4: $\int \frac{\cos^5\sqrt{x}}{\sqrt{x}}\,dx =$

(a) $2\sin\sqrt{x} - \frac{4}{3}\sin^3\sqrt{x} + \frac{2}{5}\sin^5\sqrt{x} + C$

(b) $1 - 2\sin^2\sqrt{x} + \sin^4\sqrt{x} + C$

(c) $2\sin\sqrt{x} - 3\sin^2\sqrt{x} + 5\sin^5\sqrt{x} + C$

(d) $2 - \sin^2\sqrt{x} + \frac{1}{5}\sin^5\sqrt{x} + C$

(e) $\sin\sqrt{x} - \frac{1}{3}\sin^3\sqrt{x} + \frac{1}{5}\sin^5\sqrt{x} + C$