

**Math 122**  
**Quiz 2 Review**

1.  $\int x^2 \ln x \, dx$

2.  $\int \cos^2 3x \sin^2 3x \, dx$

3.  $\int \sin^5 x \cos^2 x \, dx$

4.  $\int x^2 \cos x \, dx$

5.  $\int \frac{x^3}{\sqrt{1-x^2}} \, dx$

6.  $\int x^2 e^{2x} \, dx$

7.  $\int x e^{x^2} \, dx$

8.  $\int x e^{2x} \, dx$

9.  $\int \cos^3 x \, dx$

10.  $\int \ln(x^3) \, dx$

11.  $\int \cos^3 2x \, dx$

12.  $\int \sec^3 x \tan^3 x \, dx$

13.  $\int \sec^4 x \, dx$

14.  $\int \sec^4 x \tan^2 x \, dx$

15.  $\int \frac{x^3}{\sqrt{1-x^2}} \, dx$

16.  $\int \sqrt{\tan x} \sec^4 x \, dx$

17.  $\int \sqrt{\sec x} \tan^3 x \, dx$

## Answers

1.  $\frac{1}{3}x^3 \left[ \ln|x| - \frac{1}{3} \right] + C$
2.  $\frac{x}{8} - \frac{1}{96} \sin 12x + C$
3.  $-\frac{\cos^3 x}{3} + \frac{2 \cos^5 x}{5} - \frac{\cos^7 x}{7} + C$
4.  $x^2 \sin x + 2x \cos x - 2 \sin x + C$
5.  $\frac{1}{2} \left[ \frac{2}{3}(1-x^2)^{3/2} - 2(1-x^2)^{1/2} \right] + C$
6.  $\frac{x^2}{2} e^{2x} - \frac{x}{2} e^{2x} + \frac{1}{4} e^{2x} + C$
7.  $\frac{1}{2} e^{x^2} + C$
8.  $\frac{x e^{2x}}{2} - \frac{e^{2x}}{4} + C$
9.  $\sin x - \frac{\sin^3 x}{3} + C$
10.  $x \ln(x^3) - 3x + C$
11.  $\frac{1}{2} \left[ \sin 2x - \frac{\sin^3 2x}{3} \right] + C$
12.  $\frac{\sec^5 x}{5} - \frac{\sec^3 x}{3} + C$
13.  $\frac{\tan^3 x}{3} + \tan x + C$
14.  $\frac{\tan^5 x}{5} + \frac{\tan^3 x}{3} + C$
15.  $\frac{1}{2} \left[ \frac{2}{3}(1-x^2)^{3/2} - 2(1-x^2)^{1/2} \right] + C$
16.  $\frac{2}{7} \tan^{7/2} x + \frac{2}{3} \tan^{3/2} x + C$
17.  $\frac{2}{5} \sec^{5/2} x - 2 \sec^{1/2} x + C$

For each of the following integrals, use the tables in the book.

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

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

3.  $\int \frac{x^2}{\sqrt{16x^2 + 9}} \, dx$

4.  $\int \frac{x^2}{\sqrt{25 + 16x^2}} \, dx$

5.  $\int x\sqrt{4 - x^4} \, dx$

6.  $\int e^x \sqrt{9 + e^{2x}} \, dx$

7.  $\int \frac{\sqrt{x^4 - 1}}{x} \, dx$

8.  $\int \frac{e^{3x}}{\sqrt{25 + 16e^{2x}}} \, dx$

9.  $\int x^8 \sqrt{4x^6 - 1} \, dx$