

**Math 122**  
**Quiz 3 Review**

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

2.  $\int \frac{1}{\sqrt{x^2+4}} dx$

3.  $\int \frac{1}{(16-x^2)^{3/2}} dx$

4.  $\int \frac{1}{\sqrt{4x^2+9}} dx$

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

6.  $\int \frac{3x+11}{x^2+5x+6} dx$

7.  $\int \frac{1}{x^2-a^2} dx$

8.  $\int \frac{x^3+6x^2+3x+6}{x^3+2x^2} dx$

9.  $\int \frac{2x^2+5x-1}{x^3+x^2-2x} dx$

10.  $\int \frac{3x+6}{x^3+2x^2-3x} dx$

11.  $\int x^3\sqrt{4-x^2} dx$

12.  $\int \frac{6x^2-10x+2}{x^3-3x^2+2x} dx$

13.  $\int \frac{1}{(9-x^2)^{3/2}} dx$

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

15.  $\int \frac{3x^2-6x+9}{(x^2+9)(x-3)} dx$

Answers

1.  $\frac{1}{2} \left[ \frac{2}{3}(1-x^2)^{3/2} - 2(1-x^2)^{1/2} \right] + C$
2.  $\ln |x + \sqrt{x^2 + 4}| + C$
3.  $\frac{x}{16\sqrt{16-x^2}} + C$
4.  $\frac{1}{2} \ln |\sqrt{4x^2 + 9} + 2x| + C$
5.  $2 \ln |x| - 3 \ln |x + 1| + C$
6.  $5 \ln |x + 2| - 2 \ln |x + 3| + C$
7.  $\frac{1}{2a} [\ln |x - a| - \ln |x + a|] + C$
8.  $x - \frac{3}{x} + 4 \ln |x + 2| + C$
9.  $\frac{1}{2} \ln |x| + 2 \ln |x - 1| - \frac{1}{2} \ln |x + 2| + C$
10.  $2 \ln |x| + \frac{9}{4} \ln |x - 1| - \frac{1}{4} \ln |x + 3| + C$
11.  $-32 \left[ \frac{\left( \frac{\sqrt{4-x^2}}{2} \right)^3}{3} - \frac{\left( \frac{\sqrt{4-x^2}}{2} \right)^5}{5} \right] + C$
12.  $\ln |x| + 2 \ln |x - 1| + 3 \ln |x - 2| + C$
13.  $\frac{1}{9} \frac{x}{\sqrt{9-x^2}} + C$
14.  $-3 \ln |x| + 2 \ln |x^2 + 1| + C$
15.  $\ln |x^2 + 9| + \ln |x - 3| + C$