

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. $\int \tanh x dx$

6. $\int \frac{\cosh x}{3 \sinh x + 4} dx$

7. $\int \operatorname{arctanh} x dx$

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

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

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

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

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

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

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. $\frac{(\sqrt{1-x^2})^3}{3} - \sqrt{1-x^2} + C$

2. $\ln \left| \frac{x}{2} + \frac{\sqrt{x^2+4}}{2} \right| + C$

3. $\frac{x}{16\sqrt{16-x^2}} + C$

4. $\frac{1}{2} \ln \left| \frac{\sqrt{4x^2+9}}{3} + \frac{2x}{3} \right| + C$

5. $\ln \cosh x + C$

6. $\frac{1}{3} \ln |3 \sinh x + 4| + C$

7. $x \operatorname{arctanh} x + \frac{1}{2} \ln |1-x^2| + C$

8. $2 \ln |x| - 3 \ln |x+1| + C$

9. $5 \ln |x+2| - 2 \ln |x+3| + C$

10. $x - \frac{3}{x} + 4 \ln |x+2| + C$

11. $\frac{1}{2} \ln |x| + 2 \ln |x-1| - \frac{1}{2} \ln |x+2| + C$

12. $-2 \ln |x| + \frac{9}{4} \ln |x-1| - \frac{1}{4} \ln |x+3| + C$

13. $\ln |x| + 2 \ln |x-1| + 3 \ln |x-2| + C$

14. $-3 \ln |x| + 2 \ln |x^2+1| + C$

15. $\ln |x^2+9| + \ln |x-3| + C$