M251 Practice Exam 8.4-8.7
P. Staley

1. Find the indefinite integral.

$$\int \sqrt{25-64x^2}\,dx$$

2. Find the indefinite integral.

$$\int x\sqrt{4-25x^2}\,dx$$

3. Find the indefinite integral.

$$\int \frac{1}{x\sqrt{16+25x^2}}\,dx$$

4. Find the indefinite integral.

$$\int \frac{1}{\left(x^2+6\right)^{3/2}}\,dx$$

5. Find the definite integral.

$$\int_3^4 \frac{\sqrt{x^2-9}}{x^2}\,dx$$

6. Find the indefinite integral.

$$\int \frac{x-28}{x^2-x-6}\,dx$$

7. Find the indefinite integral.

$$\int \frac{x^2}{x^2+2x-15}\,dx$$

8. Find the indefinite integral.

$$\int \frac{x^2+2x}{x^3-x^2+x-1}\,dx$$

9. Find the indefinite integral.

$$\int \frac{2x^3-5x^2+4x-4}{x^2-x}\,dx$$

10. Find the indefinite integral.

$$\int \frac{4x-2}{3(x-1)^2}\,dx$$

11. Use integration tables to evaluate the integral.

$$\int \frac{x}{(2+3x)^2}\,dx$$

12. Use integration tables to evaluate the integral.

$$\int \frac{x}{\sqrt{2+3x}}\,dx$$

13. Use integration tables to evaluate the integral.

$$\int \frac{x}{1+\sin x^2}\,dx$$

14. Use integration tables to evaluate the integral.

$$\int \frac{x}{1+e^{x^2}}\,dx$$

15. Use integration tables to evaluate the integral.

$$\int \frac{x}{x^2+4x+8}\,dx$$

16. Use integration tables to evaluate the integral.

$$\int \frac{3}{2x\sqrt{9x^2-1}}\,dx \quad , \qquad x > 1/3$$

17. Use integration tables to evaluate the integral.

$$\int \frac{1}{\sin \pi x \cos \pi x}\,dx$$

18. Use integration tables to evaluate the integral.

$$\int \frac{1}{1+\tan \pi x}\,dx$$

19. Use L'Hôpital's Rule to evaluate the limit.

$$\lim_{x \to 1} \frac{(\ln x)^2}{x - 1}$$

20. Use L'Hôpital's Rule to evaluate the limit.

$$\lim_{x \to 0} \frac{\sin \pi x}{\sin 2\pi x}$$

21. Use L'Hôpital's Rule to evaluate the limit.

$$\lim_{x \to \infty} \frac{e^{2x}}{x^2}$$

22. Use L'Hôpital's Rule to evaluate the limit.

$$\lim_{x\to\infty} xe^{-x^2}$$

23. Use L'Hôpital's Rule to evaluate the limit.

$$\lim_{x\to\infty} (\ln x)^{2/x}$$

24. Use L'Hôpital's Rule to evaluate the limit.

$$\lim_{x\to 1^+} \left(\frac{2}{\ln x} - \frac{2}{x-1} \right)$$