

Tutorial 3

Evaluate the following:

1. $\int (2x^2 + e^x) dx$

2. $\int y^2 \sqrt[3]{y} dy$

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

4. $\int (2x - 3 \cos x + e^x) dx$

5. $\int \frac{x^3 + 3x + 4}{\sqrt{x}} dx$

6. $\int \left(\sqrt{x} - \frac{1}{\sqrt{x}} \right)^2 dx$

7. $\int (1 - x) \sqrt{x} dx$

8. $\int (2x^2 - 3 \sin x + 5\sqrt{x}) dx$

9. $\int (\sin 2x - 4e^{3x}) dx$

10. $\int \frac{2 - 3 \sin x}{\cos^2 x} dx$

11. $\int \sin 4x \cdot \sin 8x dx$

12. $\int \tan^3 2x \cdot \sec 2x dx$

13. $\int \cos 2x \cdot \cos 4x \cdot \cos 6x dx$

14. $\int \sin x \cdot \sin 2x \cdot \sin 3x dx$

15. $\int \frac{1}{\sqrt{9 - 25x^2}} dx$

16. $\int \frac{1}{9x^2 + 6x + 5} dx$

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

18. $\int \frac{1 - \cos x}{1 + \cos x} dx$

19. $\int \sin^{-1}(\cos x) dx$

20. $\int \sin^4 x dx$

Tutorial 4

Evaluate the following:

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

2. $\int (x^3 - 1)^{\frac{1}{3}} \cdot x^5 dx$

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

4. $\int \tan^2(2x - 3) dx$

5. $\int x \cdot \sin 3x dx$

6. $\int x \cdot \tan^{-1} x dx$

7. $\int e^x (\sin x + \cos x) dx$

8. $\int (x^2 + 1) \log x dx$

9. $\int e^x \left(\frac{1}{x} - \frac{1}{x^2} \right) dx$

10. $\int \frac{x \cdot e^x}{(1+x)^2} dx$

11. $\int \frac{x}{(x+1)(x+2)} dx$

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

13. $\int \frac{5x}{(x+1)(x^2-4)} dx$

14. $\int \frac{x}{(x^2+1)(x-1)} dx$

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

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

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

18. $\int \frac{x^2}{1-x^6} dx$

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

20. $\int \sqrt{x^2 + 4x + 6} dx$

Tutorial 5

Evaluate the following:

1. $\int_1^2 (4x^3 - 5x^2 + 6x + 9) dx$

2. $\int_0^{\pi/2} \cos 2x dx$

3. $\int_{\pi/6}^{\pi/4} \operatorname{cosec} x dx$

4. $\int_0^1 \frac{dx}{\sqrt{1-x^2}}$

5. $\int_0^1 x \cdot e^{x^2} dx$

6. $\int_2^3 \frac{x dx}{x^2+1}$

7. $\int_0^{\pi/2} \frac{\sin x}{1+\cos^2 x} dx$

8. $\int_{-1}^1 \frac{dx}{x^2+2x+5}$

9. $\int_0^{\pi/2} \frac{\cos^5 x}{\sin^5 x + \cos^5 x} dx$

10. $\int_{-1}^2 |x^3 - x| dx$

11. $\int_{-\pi/2}^{\pi/2} \sin^2 x dx$

12. $\int_0^2 x\sqrt{2-x} dx$

13. $\int_0^1 x \cdot e^x dx$

14. $\int_0^{\pi/2} \log(\sin x) dx$