Homework for Session 7 (Solutions)

Gana Amin

November 8, 2024

1. $\int (4x^3 - 6x^2 + 5x - 2)\,dx = x^4 - 2x^3 + \frac{5}{2}x^2 - 2x + C$
2. $\int (x^{1/3} + 2x^{-1/2})\,dx = \frac{3}{4}x^{4/3} + 4x^{1/2} + C$
3. $\int (7x^6 - \frac{3}{x^2} + \sqrt[3]{x})\,dx = x^7 + \frac{3}{x} + \frac{3}{4}x^{4/3} + C$
4. $\int (12x^5 + 5x^4 - 8x^3 + x^2 - 1)\,dx = 2x^6 + x^5 - 2x^4 + \frac{1}{3}x^3 - x + C$
5. $\int (\frac{1}{2}x^2 - \frac{1}{3}x^3 + \frac{1}{4}x^4)\,dx = \frac{1}{6}x^3 - \frac{1}{12}x^4 + \frac{1}{20}x^5 + C$
6. $\int (x^2 + 1)(x - 1)\,dx = \int (x^3 - x^2 + x - 1)\,dx = \frac{1}{4}x^4 - \frac{1}{3}x^3 + \frac{1}{2}x^2 - x + C$
7. $\int (2x - 5)^2\,dx = \int (4x^2 - 20x + 25)\,dx = \frac{4}{3}x^3 - 10x^2 + 25x + C$
8. $\int (\sqrt{x} + \frac{1}{\sqrt{x}})^2\,dx = \int (x + 2 + \frac{1}{x})\,dx = \frac{1}{2}x^2 + 2x + \ln|x| + C$
9. $\int (x^3 + 3x^2 + 3x + 1)\,dx = \frac{1}{4}x^4 + x^3 + \frac{3}{2}x^2 + x + C$
10. $\int (e^x + \sin x + \cos x)\,dx = e^x - \cos x + \sin x + C$