

1-10: Find the general indefinite integral

1. $\int (\sqrt{x^3} + \sqrt[3]{x^2}) dx$

2. $\int \left(x^4 - \frac{1}{2}x^3 + \frac{1}{4}x - 2 \right) dx$

3. $\int (u+4)(2u+1) du$

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

5. $\int \left(x^2 + 1 + \frac{1}{x^2 + 1} \right) dx$

6. $\int (\csc^2 t - 2e^t) dt$

Answers:

1) $\frac{2}{5}x^{\frac{5}{2}} + \frac{3}{5}x^{\frac{5}{3}} + C$

2) $\frac{1}{5}x^5 - \frac{1}{8}x^4 + \frac{1}{8}x^2 - 2x + C$

3) $\frac{2}{3}u^3 + \frac{9}{2}u^2 + 4u + C$

4) $\frac{1}{3}x^3 - 4\sqrt{x} + C$

5) $\frac{1}{3}x^3 + x + \tan^{-1}x + C$

6) $-\cot(t) - 2e^t + C$

$$7. \int \sec t (\sec t + \tan t) dt$$

$$8. \int (1 + \tan^2 \alpha) d\alpha$$

$$9. \int v(v^2 + 2)^2 dv$$

$$10. \int (y^3 + 1.8y^2 - 2.4y) dy$$

$$11. \int (x^2 + x^{-2}) dx$$

$$12. \int (e^x - 2x^2) dx$$

Answers:

7) $\tan(t) + \sec(t) + C$

8) $\tan(\alpha) + C$

9) $\frac{1}{6}v^6 + v^4 + 2v^2 + C$

10) $\frac{1}{4}y^4 + \frac{3}{5}y^3 - \frac{6}{5}y^2 + C$

11) $\frac{1}{3}x^3 - \frac{1}{x} + C$

12) $e^x - \frac{2}{3}x^3 + C$