

Special Integration by Parts Problems

1. $\int \cos^{-1} x dx$

2. $\int \sin^{-1} x dx$

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

4. $\int e^x \sin(3x) dx$

5. $\int e^{-x} \cos(4x) dx$

6. $\int e^{3x} \sin(2x) dx$

7. $\int e^{-2x} \cos(4x) dx$

8. $\int e^{5x} \sin(2x) dx$

Answers

1. $x \cos^{-1} x - \sqrt{1-x^2} + C$

2. $x \sin^{-1} x + \sqrt{1-x^2} + C$

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

4. $-\frac{3}{10} e^x \cos(3x) + \frac{1}{10} e^x \sin(3x) + C$

5. $\frac{4}{17} e^{-x} \sin(4x) - \frac{1}{17} e^{-x} \cos(4x) + C$

6. $-\frac{2}{13} e^{3x} \cos(2x) + \frac{3}{13} e^{3x} \sin(2x) + C$

7. $\frac{1}{5} e^{-2x} \sin(4x) - \frac{1}{10} e^{-2x} \cos(4x) + C$

8. $-\frac{2}{29} e^{5x} \cos(2x) + \frac{5}{29} e^{5x} \sin(2x) + C$