Compute the following integrals:

1. $\displaystyle\int xe^x \; dx$

2. $\displaystyle\int x^2 \ln x \; dx$

3. $\displaystyle\int \arcsin x \; dx$

4. $\displaystyle\int x^2 \sin x \; dx$

5. $\displaystyle\int x\sqrt{x-1} \; dx$

6. $\displaystyle\int e^{\sqrt{x}} \; dx$

7. $\displaystyle\int \ln(1+x^2) \; dx$

8. $\displaystyle\int \ln x \; dx$

9. $\displaystyle\int x^2 e^{x^3} \; dx$

# Answers

1. $xe^x - e^x + C$

2. $\frac{1}{3}x^3 \ln x - \frac{x^3}{9} + C$

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

4. $-x^2 \cos x + 2x \sin x + 2 \cos x + C$

5. $\frac{2x}{3}(x-1)^{3/2} - \frac{4}{15}(x-1)^{5/2} + C$

6. $2(\sqrt{x}e^{\sqrt{x}} - e^{\sqrt{x}}) + C$

7. $x \ln(1 + x^2) + 2(\arctan x - x) + C$

8. $x \ln x - x + C$

9. $\frac{e^{x^3}}{3} + C$