

Math 122 - #1
Integration by substitution

Compute the following integrals:

1. $\int 3x^2(x^3 - 7)^2 dx$

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

3. $\int \frac{3x dx}{\sqrt[3]{3 - 7x^2}}$

4. $\int \frac{x}{\sqrt{9 + x^2}} dx$

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

6. $\int x(x + 3)^5 dx$

7. $\int \frac{e^x}{\sqrt{1 + e^x}} dx$

8. $\int \frac{1}{x\sqrt{\ln x}} dx$

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Answers

1. $\frac{(x^3 - 7)^3}{3} + C$

2. $\frac{2x^{3/2}}{3} + \frac{2x^{5/2}}{5} + C$

3. $-\frac{9}{28}(3 - 7x^2)^{2/3} + C$

4. $\sqrt{9 + x^2} + C$

5. $\frac{x^3}{3} + x + C$

6. $\frac{(x + 3)^7}{7} - \frac{(x + 3)^6}{2} + C$

7. $2\sqrt{1 + e^x} + C$

8. $2\sqrt{\ln x} + C$