



## **Problem Set 32: U-Substitution**

Evaluate the following indefinite integrals using U-substitution:

1.  $\int (3x - 6)^4 dx$

2.  $\int \sqrt{x - \pi} dx$

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3.  $\int x(9x^2 + 1)^3 dx$

4.  $\int \frac{8x + 2}{(2x^2 + x - 5)^6} dx$

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5.  $\int (2x^2 + 2x)^{1/3} \cdot (8x + 4) dx$

6.  $\int x(2x - 1)^4 dx$

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7.  $\int (x + 1)^7 \left(-\frac{3}{2}x\right) dx$

8.  $\int \cos(-3x + 10) dx$

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9.  $\int \sin^3 x \cdot \cos x \, dx$

10.  $\int \cot^3 x \cdot \csc^2 x \, dx$



11.  $\int \sec^4 x \cdot \tan x \, dx$

Evaluate the following **definite integrals** using U-substitution:

12.  $\int_0^2 (2x^2 + 4x)^5 (4x + 4) \, dx$

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13.  $\int_{-1}^1 (3x - 1)^3 dx$

14.  $\int_{\pi/4}^{\pi/2} \csc^2 x \cdot (\cot x - 3) dx$