

Integration by Substitution (U-Substitution)

Directions: Find the indefinite integral.

1. $\int x^4 (7 - x^5)^3 dx$

2. $\int 8x(x^2 - 1)^{\frac{1}{3}} dx$

$$3. \int \frac{6x}{\sqrt{2x^2+1}} dx$$

$$4. \int \sec^2\left(\frac{\theta}{4}\right) d\theta$$

5. $\int \frac{\sin \sqrt{\theta}}{\sqrt{\theta}} d\theta$

6. $\int x\sqrt{3x+2} dx$

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

Directions: Evaluate the definite integral.

$$8. \int_0^2 (x^2 + 2x - 4)^3 (x+1) dx$$

$$9. \int_0^{\frac{\pi}{6}} (1 - \cos 3x) \sin 3x \, dx$$