Name : _____ Score : _____

Teacher : _____ Date : _____

# Integration by Substitution

**Find each indefinite integral using substitution.**

1) $\int ((6x^2 - 40x)\cos(2x^3 - 20x^2))dx$ ; $u = 2x^3 - 20x^2$

2) $\int \left(\frac{-(15x^2 - 30x)}{\csc(-x^3 + 3x^2)}\right)dx$ ; $u = -x^3 + 3x^2$

3) $\int \left(\frac{12x^2 - 18}{\sec(4x^3 - 18x)}\right)dx$ ; $u = 4x^3 - 18x$

4) $\int ((6x^2)\tan(-2x^3 + 17))dx$ ; $u = -2x^3 + 17$

5) $\int (-(30x^2 + 10)\sin(5x^3 + 5x))dx$ ; $u = 5x^3 + 5x$

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**Find each indefinite integral using substitution.**

1) $\int ((6x^2 - 40x)\cos(2x^3 - 20x^2))dx$ ; $u = 2x^3 - 20x^2$

$\sin(2x^3 - 20x^2) + C$

2) $\int \left(\frac{-(15x^2 - 30x)}{\csc(-x^3 + 3x^2)}\right)dx$ ; $u = -x^3 + 3x^2$

$-5\cos(-x^3 + 3x^2) + C$

3) $\int \left(\frac{12x^2 - 18}{\sec(4x^3 - 18x)}\right)dx$ ; $u = 4x^3 - 18x$

$\sin(4x^3 - 18x) + C$

4) $\int ((6x^2)\tan(-2x^3 + 17))dx$ ; $u = -2x^3 + 17$

$\ln|\cos(-2x^3 + 17)| + C$

5) $\int (-(30x^2 + 10)\sin(5x^3 + 5x))dx$ ; $u = 5x^3 + 5x$

$2\cos(5x^3 + 5x) + C$