Name: _____ Score: _____

Teacher: _____ Date: _____

Integration by substitution

Evaluate each of the following integrals

1. $\displaystyle\int (8x - 12)(4x^2 - 12x)^4 dx$ $\frac{1}{5}(4x^2 - 12x)^5 + C$	**2.** $\displaystyle\int 3t^{-4}(2 + 4t^{-3})^{-7}\, dt$ $\frac{1}{24}(2 + 4t^{-3})^{-6} + C$
3. $\displaystyle\int (3 - 4w)(4w^2 - 6w + 7)^{10} dw$ $-\frac{1}{22}(4w^2 - 6w + 7)^{11} + C$	**4.** $\displaystyle\int 5(z - 4)\sqrt[3]{z^2 - 8z}\, dz$ $\frac{15}{8}(z^2 - 8z)^{\frac{4}{3}} + C$
5. $\displaystyle\int 90x^2 \sin(2 + 6x^3)\, dx$ $-5\cos(2 + 6x^3) + C$	**6.** $\displaystyle\int (15x^{-2} - 5x)\cos(6x^{-1} + x^2)\, dx$ $-\frac{5}{2}\sin(6x^{-1} + x^2) + C$
7. $\displaystyle\int (7y - 2y^3)e^{y^4 - 7y^2}\, dy$ $-\frac{1}{2}e^{y^4 - 7y^2} + C$	**8.** $\displaystyle\int \frac{4w + 3}{4w^2 + 6w - 1}\, dw$ $\frac{1}{2}\ln|4w^2 + 6w - 1| + C$
9. $\displaystyle\int (\cos(3t) - t^2)(\sin(3t) - t^3)^5 dt$ $\frac{1}{18}(\sin(3t) - t^3)^6 + C$	**10.** $\displaystyle\int 4\left(\frac{1}{z} - e^{-z}\right)\cos(e^{-z} + \ln z)\, dz$ $4\sin(e^{-z} + \ln z) + C$