

### 10.3 The Substitution Rule (*U*-Substitution)

***U*-Substitution –**

**Steps:**

$$\int (x^2 - 5)^8 2x \, dx$$

$$\int (2 + \sin x)^{10} \cos x \, dx$$

$$\int \frac{x^2}{\sqrt[3]{1-x^3}} dx$$

$$\int \frac{4w+3}{4w^2+6w-1} dw$$

### **Substitution Rule for Definite Integrals –**

$$\int_1^9 \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$$

$$\int_0^{\frac{\pi}{4}} \sec^2 x \tan x dx$$

Find the area under the curve  $y = \frac{1}{2x+1}$  from 0 to 1.