11E Integration by Substitution

1. Find $\int \left(x\sqrt{2x+5} \right) dx$ using the following substitution:
$$u = 2x + 5$$

2. Find $\int \left(x\sqrt{2x + 5} \right) dx$ using the following substitution:

$$u^2 = 2x + 5$$

3. Use the substitution $u = sinx + 1$ to find:

$$\int cosxsinx(1 + sinx)^3 \, dx$$

4. Prove that:

$$\int \left(\frac{1}{\sqrt{1-x^2}} \right) dx = arcsinx + c$$

5. Use integration by substitution to evaluate:

$$\int_0^2 x(x+1)^3 \, dx$$

6. Use integration by substitution to evaluate:
$$\int_{0}^{\frac{\pi}{2}} cosx\sqrt{1 + sinx}\, dx$$