Section 5.7

Integrals Involving Inverse Trig Functions: Let u be a differentiable function of x, and let $a > 0$.

1. $\int \frac{du}{\sqrt{a^2-u^2}} = \arcsin\frac{u}{a} + C$

2. $\int \frac{du}{a^2+u^2} = \frac{1}{a}\arctan\frac{u}{a} + C$

3. $\int \frac{du}{u\sqrt{u^2-a^2}} = \frac{1}{a}\text{arcsec}\frac{|u|}{a} + C$

1) Find the following:

a) $\int \frac{dx}{\sqrt{9-x^2}}$

b) $\int \frac{dx}{5+16x^2}$

c) $\int \frac{dx}{2x\sqrt{4x^2-25}}$

2) Find $\int \frac{dx}{2\sqrt{x}(\sqrt{1-x})}$ (Hint: let $u = \sqrt{x}$)

3) Find $\int \frac{x-5}{9+x^2}\,dx$

4) Find $\int \frac{dx}{x^2+6x+13}$

5) Find $\int \frac{dx}{\sqrt{6x-x^2}}$

Homework for 5.7: #7, 13, 29, 35, 37