Section 7.3

It is difficult to find antiderivatives for expressions that contain radicals.

In this section, we learn a technique for finding antiderivatives for such expressions.

Exercise 1. Evaluate $\int \frac{1}{x^2\sqrt{16-x^2}}\,dx$.

The following substitutions are used for eliminating radical expressions:

Expression in Integrand	Trigonometric Substitution
$\sqrt{a^2-x^2}$	$x = a\,\sin\,\theta$
$\sqrt{a^2+x^2}$	$x = a\,\tan\,\theta$
$\sqrt{x^2-a^2}$	$x = a\,\sec\,\theta$

Exercise 2. Evaluate $\int \frac{1}{\sqrt{4+x^2}}\,dx$.

Class Exercise 1. Evaluate $\int \frac{\sqrt{x^2-9}}{x}\,dx$.

Class Exercise 2. Evaluate $\int \frac{(1-x^2)^{3/2}}{x^6}\,dx$.

Class Exercise 3. Evaluate $\int \frac{x^2}{\sqrt{9-x^2}}\,dx$.

Class Exercise 4. Evaluate $\int \frac{1}{\sqrt{25x^2-4}}\,dx$.

Exercise 3. Evaluate $\int \frac{1}{\sqrt{t^2-6t+13}}\,dt$.

Class Exercise 5. Evaluate $\int \frac{x^2}{(3+4x-4x^2)^{3/2}}\,dx$.

Class Exercise 6. Evaluate $\int \frac{x^2+1}{(x^2-2x+2)^2}\,dx$.

Homework: 3-35 (every 4th)