Problem Set
Section 7.3

Trigonometric Substitution

For , $\sqrt{a^2 - x^2}$, use $x = a\sin\theta$, $0 \le \theta \le \pi$.

For , $\sqrt{a^2 + x^2}$, use $x = a\tan\theta$, $-\frac{\pi}{2} < \theta < \frac{\pi}{2}$.

For , $\sqrt{x^2 - a^2}$, use $x = a\sec\theta$, $0 \le \theta < \frac{\pi}{2}$ or $\pi \le \theta < \frac{3\pi}{2}$.

Problem 1

Find the integral $\int \frac{x^2}{\sqrt{4-x^2}} dx$.

Problem 2

Evaluate the integral $\int_5^{5\sqrt{3}} \frac{1}{x^2\sqrt{x^2+25}}dx$.

Problem 3

Find the integral $\int \frac{\sqrt{x^2-1}}{x} dx, \quad x > 1.$

Problem 4

Find the integral $\int \frac{x}{\sqrt{x^2-6x+13}}dx$.

Problem 5

Find the integral $\int (5 + 4x - x^2)^{3/2} dx$.