# Trig Substitution

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For integrals of the form $\int (a^2 - b^2x^2)^n \, dx$ use $x = \frac{a\sin(\theta)}{b}$ as your substitution.

1. $\int \sqrt{4 - 25x^2}dx$

2. $\int \frac{1}{\sqrt{1 - 9x^2}}dx$

3. $\int \frac{1}{x^4\sqrt{9-x^2}}dx$

4. $\int \frac{\sqrt{16-x^2}}{x^2}dx$

For integrals of the form $\int (a^2 + b^2x^2)^n \, dx$ use $x = \frac{a\tan(\theta)}{b}$ as your substitution.

1. $\int \frac{\sqrt{9+x^2}}{x^4} dx$

2. $\int \frac{3x}{x^2+10x+29} dx$

3. $\int_{-1}^{1} \frac{1}{(1+x^2)^2} dx$

4. $\int \frac{1}{\sqrt{25x^2+16}} dx$

For integrals of the form $\int (b^2x^2 - a^2)^n \, dx$ use $x = \frac{a \sec(\theta)}{b}$ as your substitution.

1. $\int \frac{1}{\sqrt{25x^2 - 1}} dx$

2. $\int \frac{\sqrt{16x^2 - 9}}{x} dx$

3. $\int \frac{1}{x^2\sqrt{x^2-36}}dx$

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