

MATH 155 - Chapter 8.4 - Trigonometric Substitution

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1. **Theorem: Trigonometric Substitution** ($a > 0$): If the integrals involve

1. $\sqrt{a^2 - u^2}$ Let $u = a \sin \theta$. Then use $1 - \sin^2 \theta = \cos^2 \theta$.

2. $\sqrt{a^2 + u^2}$ Let $u = a \tan \theta$. Then use $1 + \tan^2 \theta = \sec^2 \theta$.

3. $\sqrt{u^2 - a^2}$ Let $u = a \sec \theta$. Then use $\sec^2 \theta - 1 = \tan^2 \theta$.