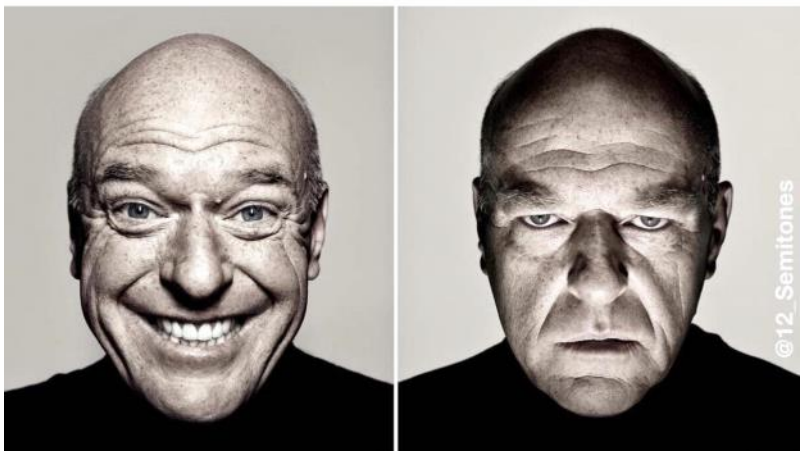
Cal1 Trig Subs

Wednesday, 12 June 2024 10:32 pm

$$\int \frac{1}{x^5} dx \qquad \int \frac{1}{x^5+1} dx$$



Example 6 Find $\int \frac{1}{\sqrt{1-x^2}}\, dx$ using the substitution $x =$.

Example 7 Use a trigonometric substitution to find $\int \frac{1}{\sqrt{4-x^2}}\, dx$.

To simplify $\sqrt{a^2 - x^2}$, for constant a, try $x = a \sin\theta$, with $-\pi/2 \leq \theta \leq \pi/2$.

Example 10 Find $\int \frac{1}{x^2 + 9}\, dx$ using the substitution $x =$ [redacted].

To simplify $a^2 + x^2$ or $\sqrt{a^2 + x^2}$, for constant a, try $x = a \tan\theta$, with $-\pi/2 < \theta < \pi/2$.

Completing the Square to Use a Trigonometric Substitution

To make a trigonometric substitution, we may first need to complete the square.

Example 12 Find $\displaystyle\int \frac{3}{\sqrt{2x - x^2}}\,dx.$