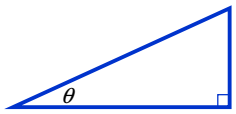
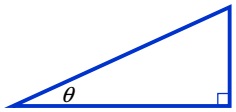
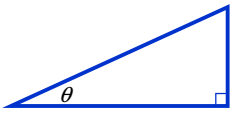
Section 8.3 Trigonometric Substitutions

For Integrals Involving	Substitutions	Reference Triangle
$\sqrt{a^2 - x^2}$ **Identity**	$x =$ $\sqrt{a^2 - x^2} =$ $-\frac{\pi}{2} \le \theta \le \frac{\pi}{2}$	
$\sqrt{x^2 - a^2}$ **Identity**	$x =$ $\sqrt{x^2 - a^2} =$ $0 \le \theta \le \frac{\pi}{2}$, or $\pi \le \theta \le \frac{3\pi}{2}$	
$\sqrt{a^2 + x^2}$ **Identity**	$x =$ $\sqrt{a^2 + x^2} =$ $-\frac{\pi}{2} \le \theta \le \frac{\pi}{2}$	

$$\int_1^{\sqrt{2}} \frac{dx}{x^2\sqrt{4 - x^2}}$$

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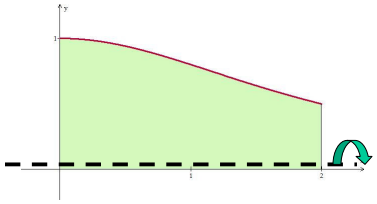
$$\int \frac{5dx}{\sqrt{25x^2 - 9}}$$

Find the volume of the solid generated by revolving the region bounded by the curves $y = \frac{4}{x^2 + 4}$, $y = 0, x = 0, x = 2$ about the $x-$axis.



$$\int_1^2 \frac{dx}{\sqrt{4x - x^2}}$$