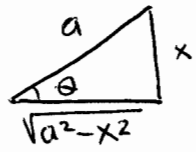
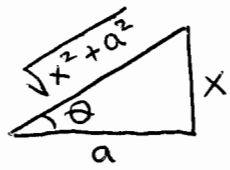
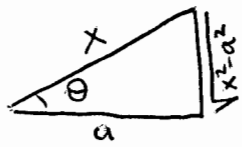
Trigonometric substitutions

Expression	Picture	Substituion	
$\sqrt{\mathbf{a^2 - x^2}}$ $-a \leq x \leq a$		$\boxed{x = a\sin\theta}$ $-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$	$\sqrt{a^2 - x^2} =$ $a\cos\theta$
$\sqrt{\mathbf{x^2 + a^2}}$		$\boxed{x = a\tan\theta}$ $-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$	$\sqrt{x^2 + a^2} =$ $a\sec\theta$
$\sqrt{\mathbf{x^2 - a^2}}$ $x \geq a$ or $x \leq -a$		$\boxed{x = a\sec\theta}$ $0 \leq \theta < \frac{\pi}{2}$ (for $x > 0$) $\pi \leq \theta < \frac{3\pi}{2}$ (for $x < 0$)	$\sqrt{x^2 - a^2} =$ $a\tan\theta$