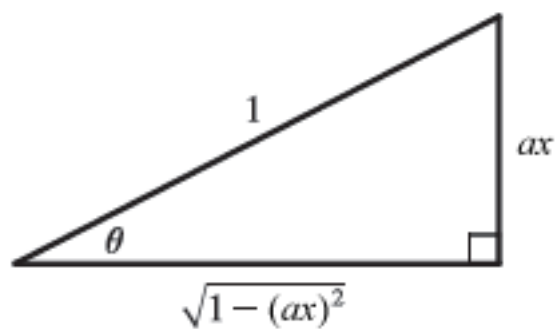


Let $2x = \sin \theta$, where $-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$. Then

$x = \frac{1}{2} \sin \theta$, $dx = \frac{1}{2} \cos \theta d\theta$, and

$$\sqrt{1-4x^2} = \sqrt{1-(2x)^2} = \cos \theta.$$

$$\begin{aligned} \int \sqrt{1-4x^2} dx &= \int \cos \theta \left(\frac{1}{2} \cos \theta \right) d\theta = \frac{1}{4} \int (1 + \cos 2\theta) d\theta \\ &= \frac{1}{4} \left(\theta + \frac{1}{2} \sin 2\theta \right) + C = \frac{1}{4} (\theta + \sin \theta \cos \theta) + C \\ &= \frac{1}{4} [\sin^{-1}(2x) + 2x \sqrt{1-4x^2}] + C \end{aligned}$$



$$a = 2$$