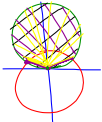


Find the area inside  $r = 3\sin\theta$  and outside  $r = 2 - \sin\theta$ .



$$3\sin\theta = 2 - \sin\theta$$

$$4\sin\theta = 2$$

$$\sin\theta = \frac{1}{2}$$

$$\theta = \frac{\pi}{6}, \frac{5\pi}{6}$$

$$\int_{\pi/6}^{5\pi/6} (3\sin\theta)^2 - (2 - \sin\theta)^2 d\theta$$

$$\int_{\pi/6}^{5\pi/6} 9\sin^2\theta - (4 - 4\sin\theta + \sin^2\theta) d\theta$$

$$\int_{\pi/6}^{5\pi/6} 8\sin^2\theta - 4 + 4\sin\theta d\theta$$

$$\int_{\pi/6}^{5\pi/6} 2\sin^2\theta - 1 + \sin\theta d\theta$$

$$2 \int_{\pi/6}^{5\pi/6} \frac{1 - \cos 2\theta}{2} - 1 + \sin\theta d\theta$$

$$2 \int_{\pi/6}^{5\pi/6} \frac{-\cos 2\theta}{2} + \sin\theta d\theta$$

$$2 \left( \frac{-\sin 2\theta}{2} - \cos\theta \right) \Big|_{\pi/6}^{5\pi/6}$$

$$2 \left( \left( +\frac{\sqrt{3}}{2} \right) + \left( +\frac{\sqrt{3}}{2} \right) + \left( \frac{\sqrt{3}}{2} \right) + \left( \frac{\sqrt{3}}{2} \right) \right)$$

$$2 \left( \frac{\sqrt{3}}{2} + \frac{2\sqrt{3}}{2} \right) = 2 \left( \frac{3\sqrt{3}}{2} \right)$$

$$3\sqrt{3}$$