$$\int \frac{1}{x^2\sqrt{16-x^2}}\,dx \qquad \text{let } x = 4\sin\theta$$

$$dx = 4\cos\theta\,d\theta$$

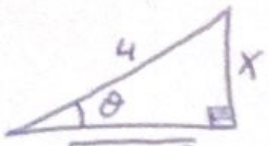
$$\int \frac{1}{16\sin^2\theta\sqrt{16-16\sin^2\theta}}(4\cos\theta)\,d\theta$$

$$\int \frac{1}{16\sin^2\theta\sqrt{16(1-\sin^2\theta)}}(4\cos\theta)\,d\theta$$

$$\int \frac{\cos\theta}{4\sin^2\theta(4\cos\theta)}\,d\theta = \int \frac{1}{16\sin^2\theta}\,d\theta$$

$$\frac{1}{16}\int \csc^2\theta\,d\theta = -\frac{1}{16}\cot\theta + C$$

using



$$\int \frac{1}{x^2\sqrt{16-x^2}}\,dx = -\frac{1}{16}\cdot\frac{\sqrt{16-x^2}}{x} + C$$

$$\ln\frac{x^2-1}{(x+1)^2} + C \qquad \frac{\cos\theta}{1} \to \frac{1}{x}$$

$$\ln(x^2-1) - 2\ln(x+1) + C$$