

$$\Downarrow f'(x) = \frac{\sqrt{x^2 - 9}}{x}, \quad f(3) = 0$$

$$y = \int \frac{\sqrt{x^2 - 9}}{x} dx$$

$$x = 3 \sec \theta$$

$$dx = 3 \sec \theta \tan \theta d\theta$$

$$= \int \frac{3 \tan \theta}{3 \sec \theta} \cdot 3 \sec \theta \tan \theta d\theta$$

$$= 3 \int \tan^2 \theta d\theta$$

$$= 3 \int (\sec^2 \theta - 1) d\theta$$

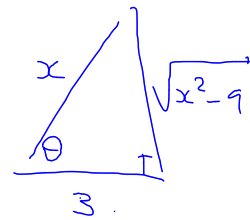
$$= 3 \tan \theta - 3\theta + c$$

$$f(3) = 0 = \sqrt{x^2 - 9} - 3 \cos^{-1} \frac{3}{x} + c$$

$$0 = 0 - 3 \cos^{-1} 1 + c$$

$$c = 0$$

$$\underline{y = \sqrt{x^2 - 9} - 3 \cos^{-1} \frac{3}{x}}$$



13b i)

