

$$\log_3 (x + 4) = \log_3 (3^{2y-1})$$

$$\log_3 (x + 4) = 2y - 1$$

$$\log_3 (x + 4) + 1 = 2y$$

$$\frac{\log_3 (x + 4) + 1}{2} = y$$

$$\frac{\log_3 (x + 4) + 1}{2} = f^{-1} (x) \quad \checkmark$$