

$1-i\sqrt{3}$ in polar form

$$z = x + iy = 1 - i\sqrt{3}$$

$$\therefore x = 1, y = -\sqrt{3}$$

$$\theta = \tan^{-1}\left|\frac{y}{x}\right| = \tan^{-1}\left|\frac{-\sqrt{3}}{1}\right| = \pi/3$$

here $z = 1 - i\sqrt{3}$, $(+, -)$ is in 4th quadrant

$$\text{angle} = 2\pi - \theta = 2\pi - \pi/3 = 5\pi/3$$

$$\theta = 5\pi/3$$

$$r = \sqrt{x^2 + y^2} = \sqrt{1^2 + (\sqrt{3})^2} = \sqrt{4} = 2$$

$$z = r(\cos\theta + i\sin\theta)$$

$$1 - i\sqrt{3} = 2 \left[\cos\left(5\pi/3\right) + i\sin\left(5\pi/3\right) \right]$$