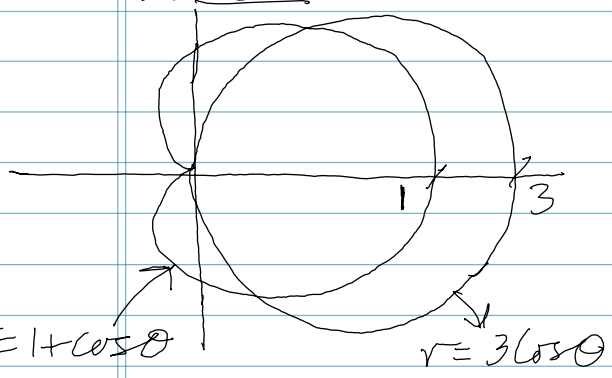
Example: Find the points of intersection of $r = 1 + \cos\theta$ and $r = 3\cos\theta$ $0 \le \theta \le 2\pi$.

solution



$3\cos\theta = 1 + \cos\theta$

$2\cos\theta = 1$

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

$\theta = \frac{\pi}{3}, \frac{5\pi}{3}$ on $[0, 2\pi)$

Observe

$(0, \pi)$ satisfies $r = 1 + \cos\theta$

Also

$(0, \frac{\pi}{2})$ & $(0, \frac{3\pi}{2})$ satisfy $r = 3\cos\theta$

So, the pole is also a point of intersection.