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c)

i) $(3-10j)^6$

$r^2 = 3^2 + 10^2$

$r^2 = 9 + 100$

$r = \sqrt{109}$

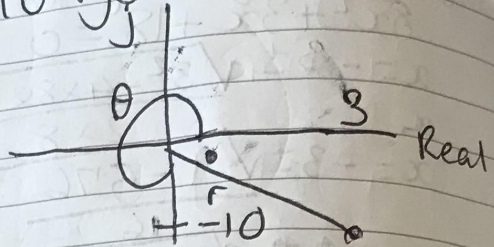
$r = 10.44$

$\tan \theta = \frac{10}{3}$

$\theta = \tan^{-1}\left(\frac{10}{3}\right)$

$\theta = 73.3^\circ$

$r^n(\cos n\theta + jsin n\theta)$



$\theta = 360 - 73.3$

$\theta = 286.7$

$10.44^6(\cos 6 \times 286.7 + jsin 6 \times 286.7)$

$1294800.898(\cos 1720.2 + jsin 1720.2)$ Polar form

$1294800.898(0.1770847403 + -0.984195608j)$

$= 229289.4808 - 1274337.357j$ Cartesian

ii)

$(-3+8j)^5$

$r^2 = 3^2 + 8^2$

$r^2 = 9 + 64$

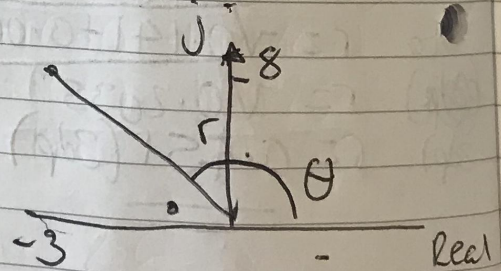
$r = \sqrt{73}$

$r = 4.179$ (3dp)

$\tan \theta = \frac{8}{-3}$

$\theta = \tan^{-1}\left(\frac{8}{-3}\right)$

$\theta = 69.443$ (3dp)



$\theta = 180 - 69.443$

$\theta = 110.557$