3.68
2

(א) $z^4 = -2 + i\sqrt{12} = 4\,cis\,120$

$r = \sqrt{4+12} = 4$

$\tan\theta = \frac{\sqrt{12}}{-2} = -\sqrt{3} \rightarrow \theta = 120$

$z_i = \sqrt[4]{4}\,cis(30+90k) = \sqrt{2}\,cis(30+90k) \quad k=0,1,2,3$

(ב) $15 \geq |z|^2 + 2\,Im\,z = x^2+y^2+2y \rightarrow x^2+(y+1)^2 \leq 16$

$|z-2i| \leq |z| \rightarrow (x)^2+(y-2)^2 \leq x^2+y^2 \rightarrow y \geq 1$