

3.69  
k8

$$z \cdot \bar{z} + i(z - \bar{z}) + \operatorname{Re}(2z) = 0$$

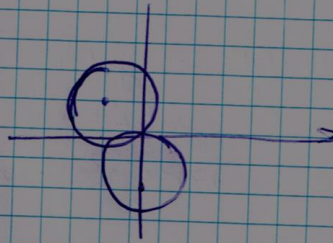
$$x^2 + y^2 - 2y + 2x = 0$$

$$(x+1)^2 + (y-1)^2 = 2$$

$$|z|^2 + 4 \operatorname{Im} z = 0$$

$$x^2 + y^2 + 4y = 0$$

$$x^2 + (y+2)^2 = 4$$



ii

$$x^2 + y^2 - 2y + 2x = x^2 + y^2 + 4y$$

$$2x = 6y \rightarrow x = 3y$$

3.69  
k9

$$|\log_2 x + 1 - i| \geq \sqrt{5}$$

$$x \geq 0 \quad \text{and}$$

$$(\log_2 x + 1)^2 + 1^2 \geq 5$$

$$(\log_2 x + 1)^2 \geq 4$$

$$\log_2 x + 1 \geq 2 \quad \text{or} \quad \log_2 x + 1 \leq -2$$

$$\log_2 x \geq 1 \quad \log_2 x \leq -3$$

$$x \geq 2 \quad \text{or} \quad x \leq \frac{1}{8}$$

$$x \geq 2, \quad 0 < x \leq \frac{1}{8}$$