

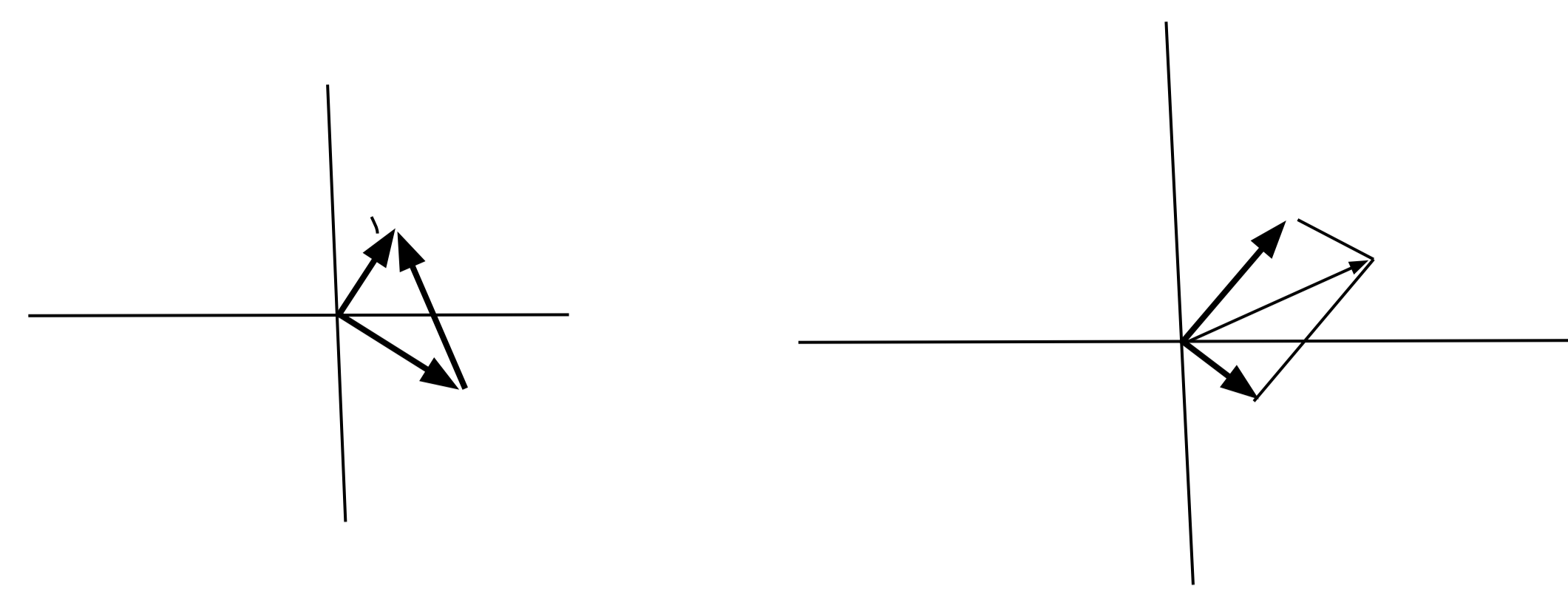
$$|z_1+z_2| \leq |z_1|+|z_2|$$

$$|z_1-z_2| \geq ||z_1|-|z_2||$$

$$|z-1| \leq |\arg z|$$

$$\underbrace{1-2 \leq 3}$$

$$\underbrace{1 \leq 2+3}$$



$$(a-b-c)^2 = a^2 + b^2 + c^2 - 2ab - 2ac + 2bc$$

ДЗ

7.7, 7.8, 7.9, 7.10

$$|3+2i-z| \min$$

$$|z| \leq 1$$

$$z = a+bi$$

$$|z| = |a+bi| = \sqrt{a^2+b^2} \leq 1$$

$$a^2+b^2 \leq 1 \quad a \leq 1 \quad b \leq 1$$

$$\min |3+2i-a-bi| = \min |3-a+i(2-b)| = \min \sqrt{(3-a)^2 + (2-b)^2}$$

$$= \min \sqrt{9-6a+a^2+4+b^2-4b} = \min \sqrt{13-6a-4b+b^2+a^2} = \min \sqrt{13-6a-4b} = \sqrt{13}$$

$$a^2+b^2=1$$

$$\min \sqrt{13-6a-4b+1}$$

Ответ  $\sqrt{13} - 1$

$$(3-a)^2 + (2-b)^2 = r^2$$

$$a^2 + b^2 = 1$$

$$13-6a-4b+1 = r^2$$

$$-6a = r^2 + 4b - 14$$

$$a = (-r^2 - 4b + 14)/6$$

$$a^2 + b^2 = 1$$

$$(-r^2 - 4b + 14)^2 / 36 + b^2 = 1$$

$$(-r^2 - 4b + 14)^2 + 36b^2 = 36$$

$$(14 - r^2 - 4b)^2 = 196 + r^4 + 16b^2 - 28r^2 - 112b + 8br^2$$

$$196 + r^4 + 16b^2 - 28r^2 - 112b + 8br^2 + 36b^2 - 36 = 0$$

$$196 + r^4 + 16b^2 - 28r^2 - 112b + 8br^2 + 36b^2 - 36 = 0$$

$$52b^2 + b(8r^2 - 112) + (160 + r^4 - 28r^2) = 0$$

$$D = (8r^2 - 112)^2 - 4 \cdot (160 + r^4 - 28r^2) \cdot 52 = 0$$

$$(8r^2 - 112)^2 - 4 \cdot (160 + r^4 - 28r^2) \cdot 52 = 0$$

$$64r^4 + 12544 - 8 \cdot 224r^2 + 52 \cdot (-640 - 4r^4 + 112r^2) = 0$$

$$52 \cdot (-640 - 4r^4 + 112r^2) = -33280 - 208r^4 + 5824r^2$$

$$64r^4 + 12544 - 8 \cdot 224r^2 - 33280 - 208r^4 + 5824r^2 = 0$$

$$-144r^4 + 4032r^2 - 20736 = 0$$

$$-36r^4 + 1008r^2 - 5184 = 0$$

$$-18r^4 + 504r^2 - 2592 = 0$$

$$-9r^4 + 252r^2 - 1296 = 0$$

$$-3r^4 + 84r^2 - 432 = 0$$

$$-r^4 + 28r^2 - 144 = 0$$

$$D/4 = 196 - 144 = 52$$

$$r^2 = 14 \pm \sqrt{52} = 14 \pm 2\sqrt{13}$$

$$r^2 = 14 - 2\sqrt{13} = 13 + 1 - 2\sqrt{13} \text{ -- интерес только меньший}$$

$$r^2 = (13 - 2\sqrt{13} + 1) = (\sqrt{13} - \sqrt{1})^2 = (\sqrt{13} - 1)^2$$

$$r = \sqrt{13} - 1$$

