

$$z' = -zi$$

$$z = a + bi$$

$$z' = a - bi$$

$$a - bi = -ai + b$$

$$a = b$$

$$-b = -a$$

$$z = t + ti, t \in \mathbb{R}$$

$$2|z| - 8z + 1 + 2i = 0$$

$$z = a + bi$$

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

$$2\sqrt{a^2 + b^2} - 8(a + bi) + 1 + 2i = 0$$

$$2\sqrt{a^2 + b^2} - 8a - 8bi + 1 + 2i = 0$$

$$2\sqrt{a^2 + b^2} - 8a + 1 + i(2 - 8b) = 0$$

$$2 - 8b = 0$$

$$4b = 1$$

$$b = 1/4$$

$$2\sqrt{a^2 + b^2} - 8a + 1 = 0$$

$$\sqrt{4a^2 + 1/4} = 8a - 1$$

$$8a - 1 \geq 0$$

$$a \geq 1/8$$

$$4a^2 + 1/4 = 64a^2 + 1 - 16a$$

$$60a^2 - 16a + 3/4 = 0 \quad | \cdot 4$$

$$240a^2 - 64a + 3 = 0$$

$$D/4 = 32^2 - 3 \cdot 240 = 304$$

$$a = (32 \pm \sqrt{304}) / 240 \quad \text{--- не подходит с минусом по условию } a \geq 1/8$$

$$b = 1/4$$

$$z_{1,2} = (32 + \sqrt{304}) / 240 + i/4$$

$$w = (z + 1) / (z - 1)$$

$$z = a + bi$$

$$z \neq \pm 1$$

ДОКТЬ ЧТ w -мнимое $\Leftrightarrow |z| = 1$

$$w = pi$$

$$pi(z - 1) = z + 1$$

$$|z| = 1$$

$$z = \frac{3}{5} + \frac{4}{5}i$$

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

$$\frac{(1 - i\sqrt{3})}{(1 + i)^{13}}$$

$$1 - i13\sqrt{3} - 78 \cdot 3 + i286\sqrt{3}^3 + 715 \cdot 9 - i1287\sqrt{3}^5 - 1726 \cdot 27 + i1716\sqrt{3}^7 + 1287 \cdot 81 - i715\sqrt{3}^9 - 286 \cdot 81 \cdot 3 + i78\sqrt{3}^{11} + 14 \cdot 81 \cdot 9 - i\sqrt{3}^{13}$$

$$1 - 78 \cdot 3 + 715 \cdot 9 - 1726 \cdot 27 + 1287 \cdot 81 - 286 \cdot 81 \cdot 3 + 14 \cdot 81 \cdot 9 = 4555$$

$$(-13 + 286\sqrt{3}^2 - 1287\sqrt{3}^4 + 1716\sqrt{3}^6 - 715\sqrt{3}^8 + 78\sqrt{3}^{10} - 729)i\sqrt{3} = -4096i\sqrt{3}$$

$$1 + 13i - 78 - 286i + 715 + 1287i - 1716 - 1716i + 1287 + 715i - 286 - 78i + 13 + i$$

$$1 - 78 + 715 - 1716 + 1287 - 286 + 13 = -64$$

$$i(13 - 286 + 1287 - 1716 + 715 - 78 + 1) = -64i$$

$$\frac{(4555 - 4096i\sqrt{3})}{(-64 - 64i)} = \frac{(4096i\sqrt{3} - 4555)}{(64 + 64i)} = \frac{(4096i\sqrt{3} - 4555)}{(64(1 + i))} \cdot \frac{(1 - i)}{(1 - i)} = \frac{(4096i\sqrt{3} - 4555)(1 - i)}{128} = \frac{(4096i\sqrt{3} - 4555 + 4096\sqrt{3} + 4555i)}{128} = \frac{((4096\sqrt{3} - 4555) + i(4555 + 4096\sqrt{3}))}{128}$$

$$4\sqrt[4]{a + bi}$$

$$a + bi \geq 0$$

$$4 = a^4 + 4b \cdot i \cdot a^3 - 6b^2 \cdot a^2 - 4i \cdot b^3 \cdot a + b^4$$