

Solution (#43) Let a, b be distinct complex numbers and r a real number. If $|r| > |a - b|$ then the triangle inequality shows

$$|z - a| - |z - b| = r$$

has no solutions.

If $r = |a - b|$ then the solutions z comprise half of the line connecting a and b , specifically the half which starts at b and moves away from a .

If $r = -|a - b|$ then the equation is solved by those z which lie on the half-line connecting a and b , which starts at a and moves away from b .