▷. **Definition**. Let A point $(x_0, y_0) \in \mathbb{R}^2$ is:

- inside the circle whose equation is $(x-h)^2+(y-k)^2 = r^2$ provided $(x_0-h)^2 + (y_0-k)^2 < r^2$
- on the circle whose equation is $(x-h)^2+(y-k)^2 = r^2$ provided $(x_0-h)^2+(y_0-k)^2 = r^2$.
- outside the circle $(x-h)^2 + (y-k)^2 = r^2$ provided $(x_0-h)^2 + (y_0-k)^2 > r^2$.

►. **Theorem 1**. Each point on or inside the circle whose equation is

$$(x-1)^2 + (y-2)^2 = 4$$

is also inside the circle whose equation is

$$x^2 + y^2 = 26 \ .$$

1. Let x, h, r be real numbers and $r > 0$. For each of the following statements, indicate whether the statement is TRUE or FALSE. No justification needed.
   (a) If $(x+h)^2 \le r^2$, then $|x+h| \le r$.
   (b) If $(x+h)^2 \le r^2$, then $x+h \le r$.
   (c) If $(x+h)^2 \le r^2$, then $-r \le x+h \le r$.
   (d) If $-3 \le x \le 2$, then $0 \le x^2 \le 4$.
   (e) If $-3 \le x \le 2$, then $0 \le x^2 \le 9$.
2. Symbolically write Theorem 1. Your answer should be of the form, for appropriately chosen inequalities which are the open sentences $P(x,y)$ and $Q(x,y)$ $(\ \forall\,(x,y) \in \mathbb{R}^2\ )\ [P(x,y) \implies Q(x,y)\ ]$.
3. Prove Theorem 1 algebraically ⟨using (in)equalities⟩, similar to this linked class example. Do **not** use calculus. Do not argue geometrically but rather use geometric idea to form your Thinking Land.

. . . .

DELETE this whole sentence and THEN put your answer to ALL parts down here.