1. Transitive Relations.

    1. $(x, y) \in R \mid x < y$ legitimate
    2. $(x, y) \in R \mid x \geq y$ comparisons.
    3. $R(x, y)$: x is taller than y.
    4. $R(x) = [(1, 2), (2, 3), (3, 1)]$.
                | | |

    $(1, 2)$ AND $(2, 3) \Rightarrow (1, 3)$

                    ?

    FALSE
    Not transitive.

    $(1, 3)$ not included in ~~set~~ pairs.

2. $x \leq y$ reflexive?   yes $(0, 0)$, $(1, 1)$ can exist in R.

                          equality.

3. $R(x, y)$: $x > y$ for all integers.

    Function?   No.   One x   can   have   multiple.   y's.
                      input   output.
        $(2, 0)$, $(2, 1)$
        $(5, 4)$, $(5, 2)$, $(5, 1)$

4. $X = \{1, 2, 5, 6\}$ $f(x) = x * 2$.

    Domain? $\{1, 2, 5, 6\}$.   INPUTS.

    Range? $\{2, 4, 10, 12\}$

5. $X = \{1, 2, 5, 6\}$ $f(x) = x \cdot 2$

Range $= \{2, 4, 10, 12\}$

6. $(x, y) \in R \mid x \leq = y.$

- Reflexive $(=)$
- Transitive $(<)$

7. $X = [(1, 2), (50, 34), (30, 30), (220, 30)]$

$(x, y) \in R \mid x \leq = y.$

R? $[(1, 2), (30, 30)]$