17. $S =$ ordered pairs of real numbers

$z = (3,-4) \in S$

$(x_1, x_2) R (y_1, y_2)$ if $x_1^2 + x_2^2 = y_1^2 + y_2^2$

$(x,y) R (a,b)$ if $x^2+y^2 = a^2+b^2$

Equiv Relation?

Reflexive? $(x,y) R (x,y)$ because $x^2+y^2 = x^2+y^2$

Symmetric? If $(x,y) R (a,b)$, then $x^2+y^2 = a^2+b^2$

so $(a,b) R (x,y)$ because $a^2+b^2 = x^2+y^2$

Transitive? If $(x,y) R (a,b)$ and $(a,b) R (p,q)$

So $x^2+y^2 = a^2+b^2$ and $a^2+b^2 = p^2+q^2$

so $x^2+y^2 = p^2+q^2$

So $(x,y) R (p,q)$

$[(3,-4)] = \{(x,y) \mid x^2+y^2 = 25\}$

= circle w/ radius 5
center at (0,0)

Infinite number of equiv. classes.