

Question22945

Decide whether y is a function of x.

18.  $5x-y=10$

19.  $x^2 + y^2 = 4$

**Solution.**

By the definition  $f$  is a function for every  $x \in X$  there is exactly one element  $y$  such that the ordered pair  $(x, y)$  is contained in the subset defining  $f$ .

18. Consider the relation  $5x - y = 10$ . It is clear that for each real number  $x$  there is the unique  $y = 5x - 10$  such that  $f(x) = y$ .

19. The relation  $x^2 + y^2 = 4$  is not a function as for the element  $x = 1$  there are two points  $y_1 = \sqrt{4 - x^2} = \sqrt{3}$  and  $y_2 = -\sqrt{4 - x^2} = -\sqrt{3}$  such that  $y = f(x)$

**Answer.**  $5x - y = 10$  is a function,  $x^2 + y^2 = 4$  is not a function.