

1. For each of the following, state if it represents a **function**, the **domain** and the **range**:

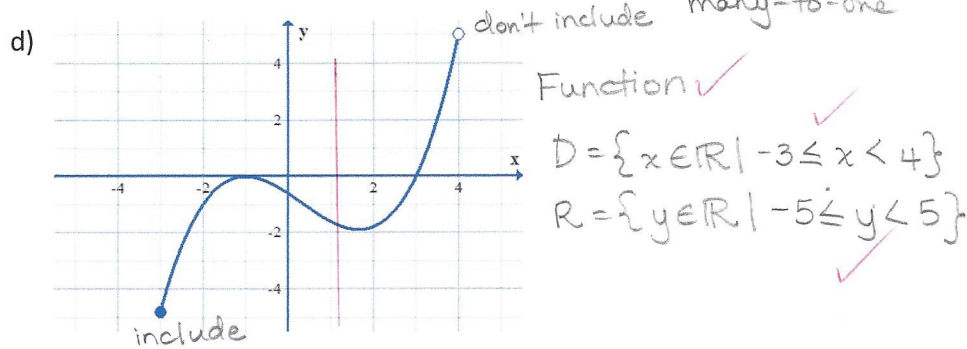
a) $M = \{(4, -1), (3, -2), (4, -3), (5, -4)\}$
 Not a function (one-to-many)
 $D = \{3, 4, 5\}$
 $R = \{-4, -3, -2, -1\}$

b) Function ✓

x	y
2	3
4	3
5	2
7	1

$D = \{2, 4, 5, 7\}$
 $R = \{1, 2, 3\}$

c) Not a function ✓
 $x^2 + y^2 = 100$
 circle
 $D = \{x \in \mathbb{R} \mid -10 \leq x \leq 10\}$
 $R = \{y \in \mathbb{R} \mid -10 \leq y \leq 10\}$



e) $f(x) = 3(x-2)^2 - 4$
 Function ✓
 $D = \{x \in \mathbb{R}\}$
 $R = \{y \in \mathbb{R} \mid y \geq -4\}$

2. If $f(x) = x^2 - 3x$ and $g(x) = 2x - 1$, determine:

a) $f(-5)$
 $f(-5) = (-5)^2 - 3(-5)$
 $= 25 + 15$
 $= 40$

b) x when $f(x) = 28$
 $28 = x^2 - 3x$
 $0 = x^2 - 3x - 28$
 $0 = (x-7)(x+4)$
 $\therefore x \in \{-4, 7\}$

c) $f(m+1)$
 $f(m+1) = (m+1)^2 - 3(m+1)$
 $= m^2 + 2m + 1 - 3m - 3$
 $= m^2 - m - 2$

d) $f(g(2))$
 $g(2) = 2(2) - 1$
 $= 3$

$f(g(2)) = f(3)$
 $= (3)^2 - 3(3)$
 $= 0$

Don't try to do this all at once!