1. For each of the following relations, determine

1. the domain 2. the range 3. if it is a function or not.

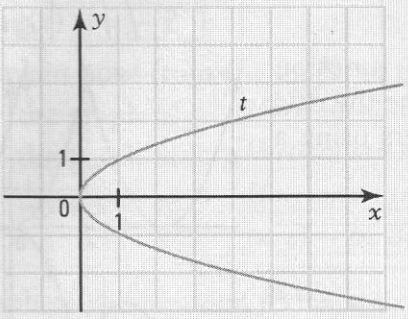
a) $r = \{(1, 2), (2, 5), (3, 4), (1, 3)\}$

1. ***Dom r = {1, 2, 3}***
2. ***Ran r = {2, 3, 4, 5}***
3. ***No***

b) $s = \{(-2, 4), (-1, 1), (0, 0), (1, 1), (2, 4)\}$

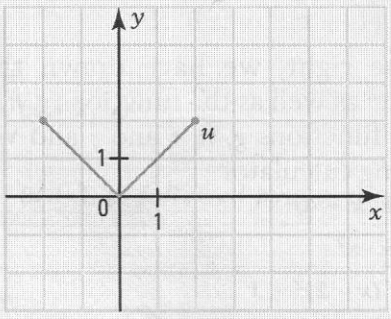
1. ***Dom s = {-2, -1, 0, 1, 2}***
2. ***Ran s = {0, 1, 4}***
3. ***Yes***

c)



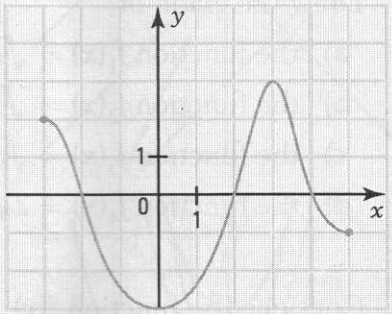
1. ***Dom t = [0, +∞[***
2. ***Ran t = ℝ***
3. ***No***

d)



1. ***Dom u = [-2, 2]***
2. ***Ran u = [0, 2]***
3. ***Yes***

2. Consider the function f represented on the right. Determine



a) 1. dom f: ***[-3, 5]*** 2. ran f. ***[-3, 3]***

b) 1. the zeros of f. ***-2, 2 and 4***

2. the y-intercept. ***-3***

c) The values of x for which the function f is

1. positive. ***[-3, -2] ∪ [2, 4]*** 2. negative. ***[-2, 2] ∪ [4, 5]***

d) The values of x for which the function f is

1. increasing. ***[0, 3]*** 2. decreasing. ***[-3, 0] ∪ [3, 5]***

e) 1. the maximum of f. ***3*** 2. the minimum of f. ***-3***

3. Draw the graph of a function f that satisfies the following conditions.

1. dom $f = [-2, 5]$.
2. ran $f = [-2, 3]$.
3. the zeros of f are -1 and 4.
4. the y-intercept is -1.
5. f is positive over $[-2, -1] \cup [4, 5]$.
6. f is negative over $[-1, 4]$.
7. max $f = 3$ and min $f = -2$.