MTH30

Sections 1.2 and 1.3

1) determine whether each relation is a function. Give the domain and range for each relation.

(a) $\{\{a, 10\}, \{b, 20\}, (c, 30), (d, 40), (e, 50)\}$

(b) $\{(1, 10), (2, 11), (3, 11), (4, 15), (5, 10)\}$

(c) $\{(5, 16), (7, 10), (6, 13), (1, 5), (7, 15), (8, 21)\}$

2) determine whether each ~~function~~ equation defines y as a function of x.

(a) $7x + 5y = 10$

(b) $7x^2 + 5y = 10$

(c) $7x^2 + 5y^2 = 10$

(d) $7x + 5y^2 = 10$

(e) $7x^2 + 5y^3 = 10$

addresses:

- solving equations
- cube and square "behavior"

3) evaluate each function at the given value of the independent variable and simplify.

(a) $f(x) = 10x - 17$

(1) $f(0)$ (2) $f(x-7)$ (3) $f(x+2h)$

(b) $g(x) = 2x^2 - 5x + 7$

(1) $g(0)$ (2) $f(x-1)$ (3) $f(x+h)$

(c) $$h(x) = \begin{cases} 2x-10 & , \quad x < 7 \\ \sqrt{x-7} & , \quad 7 \le x < 20 \\ 4 & , \quad x \ge 20 \end{cases}$$

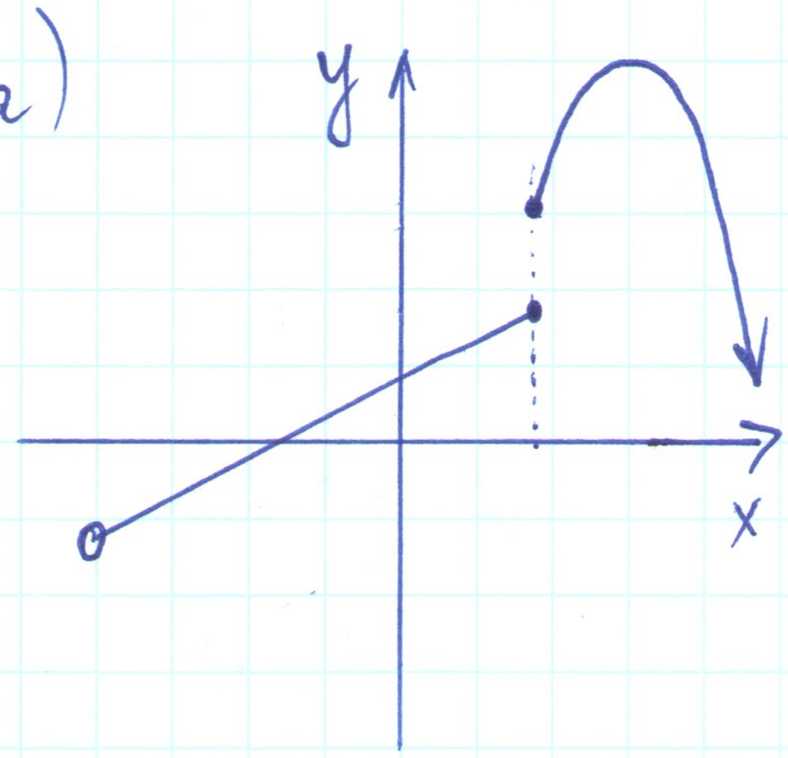
(1) $h(1)$ (2) $h(7)$ (3) $h(14)$ (4) $h(50)$

4) for the given function, find and simplify $\dfrac{f(x+h)-f(x)}{h}$, $h \neq 0$

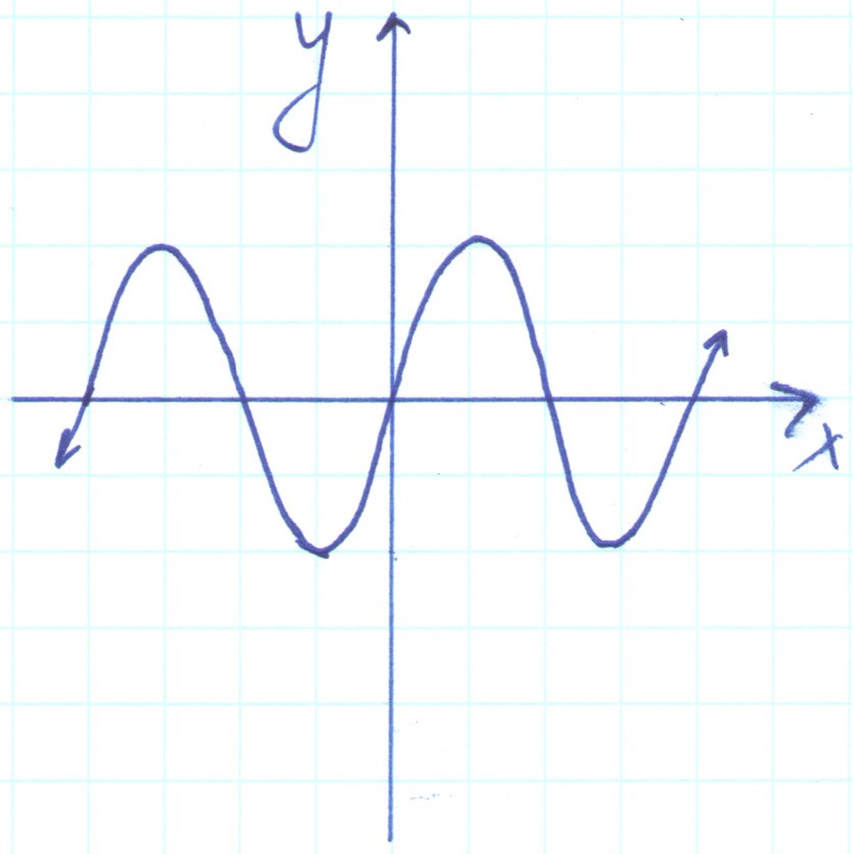
(a) $f(x) = 5$ (b) $f(x) = 2x + 7$ (c) $f(x) = -x^2 + 2x$

5) use the vertical line test to identify graphs in which y is a function of x.

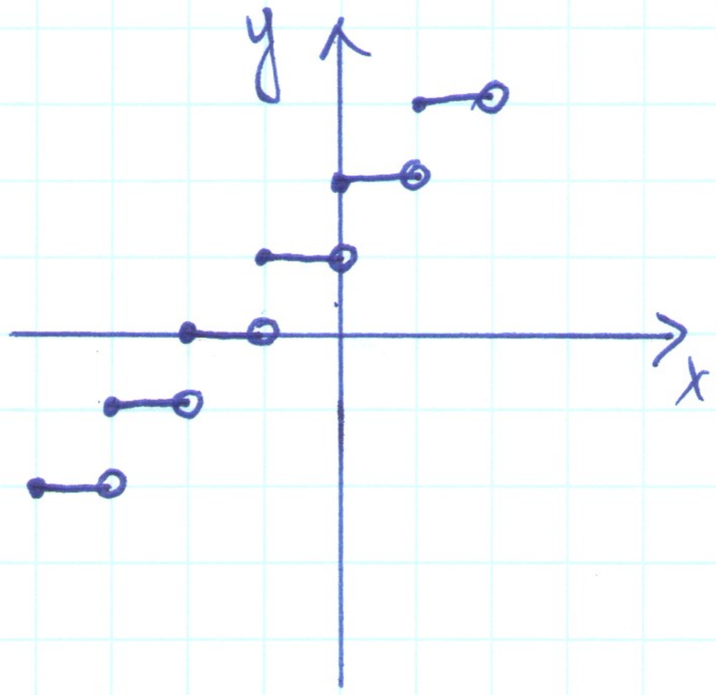
(a)



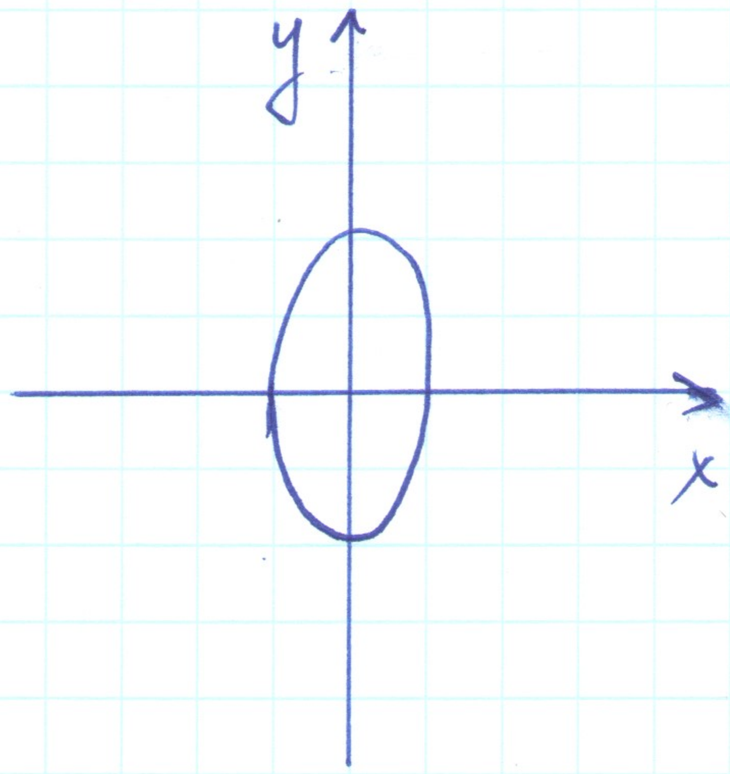
(b)



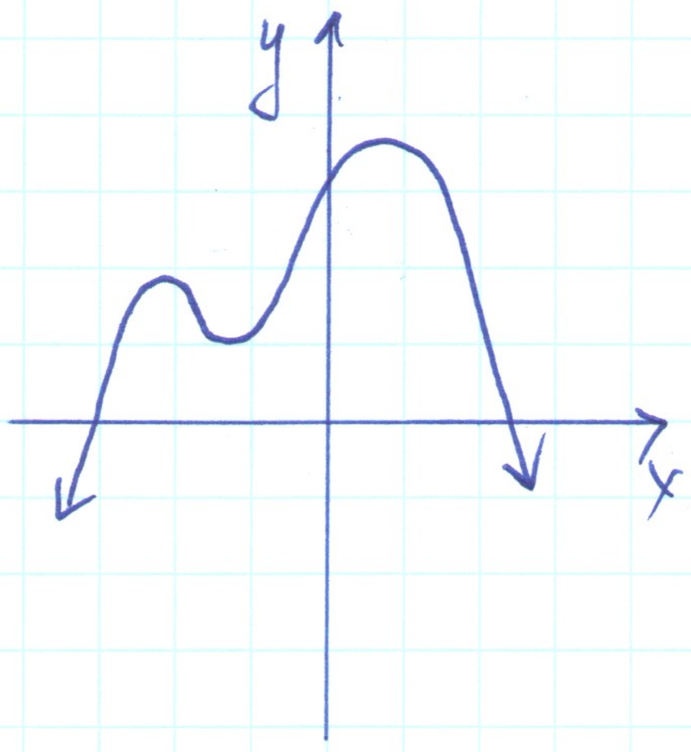
(c)



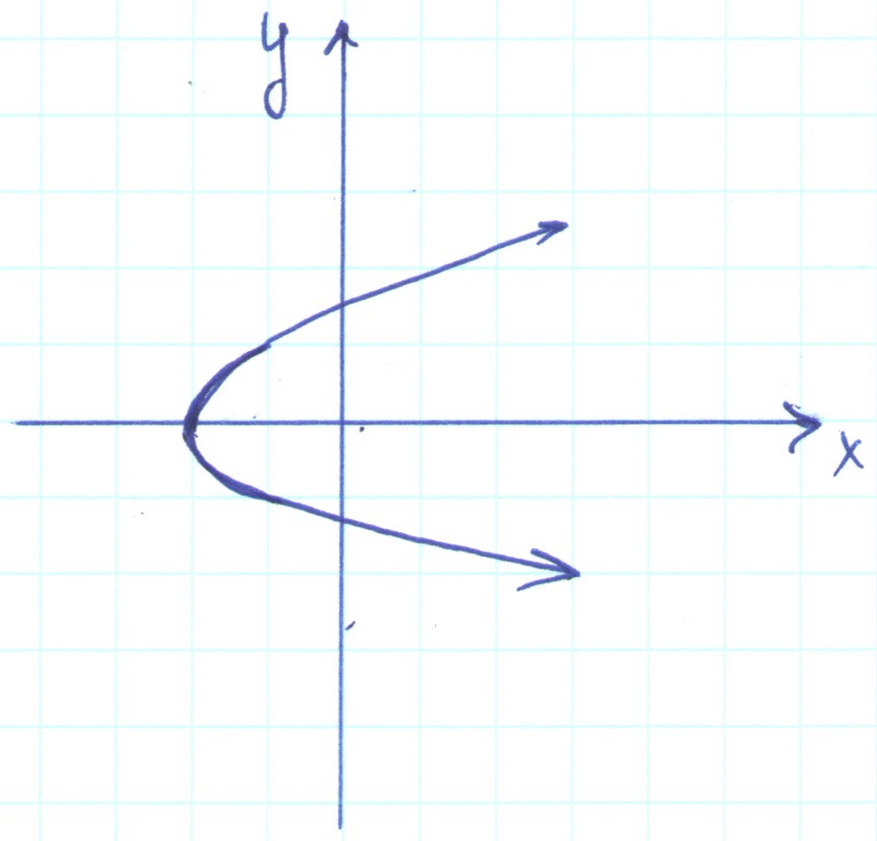
(d)



(e)



(f)



6) use the graph to determine:

a) the function's domain

b) the function's range

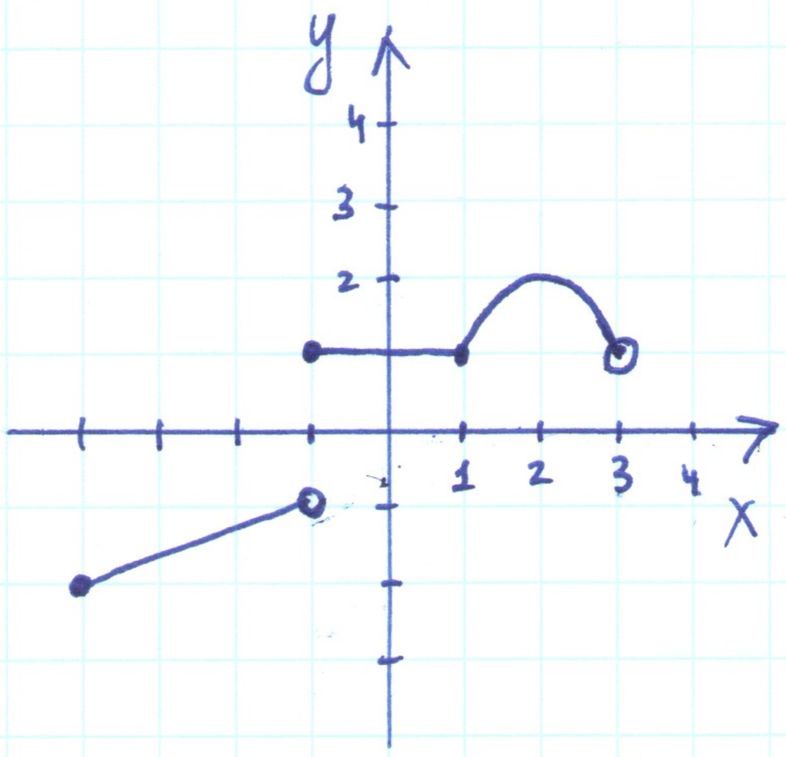
c) the x-intercepts (if any)

d) the y-intercept (if any)

e) the intervals on which the function is increasing, decreasing, or constant

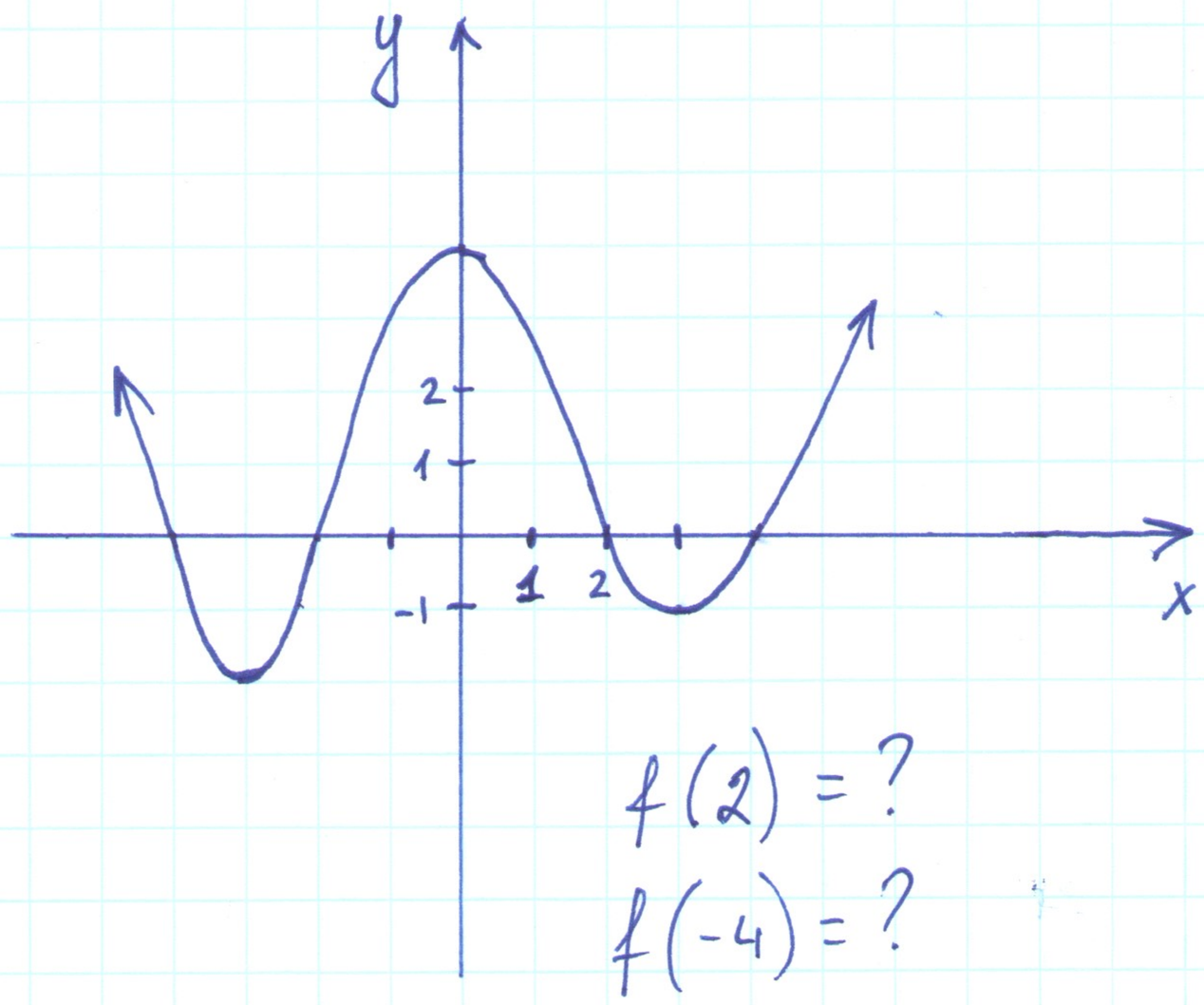
f) the relative maxima and minima (if any)

g) the indicated function's values.



$f(-1) = ?$ $f(2) = ?$

$f(0) - f(-4) = ?$



$f(2) = ?$

$f(-4) = ?$

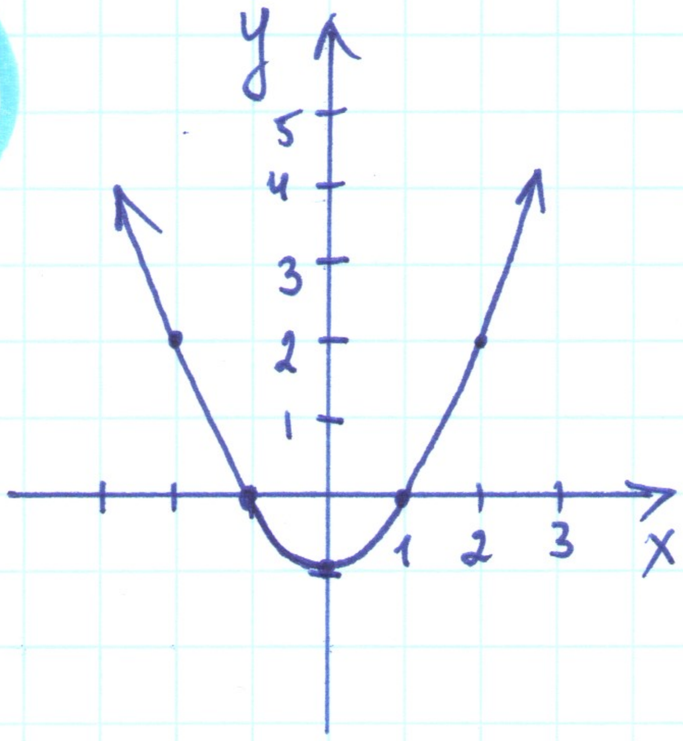
7) determine whether each function given by an equation or by a graph is even, odd, or neither.

(a) $f(x) = x^7 - 5x^5 + 2x^3$

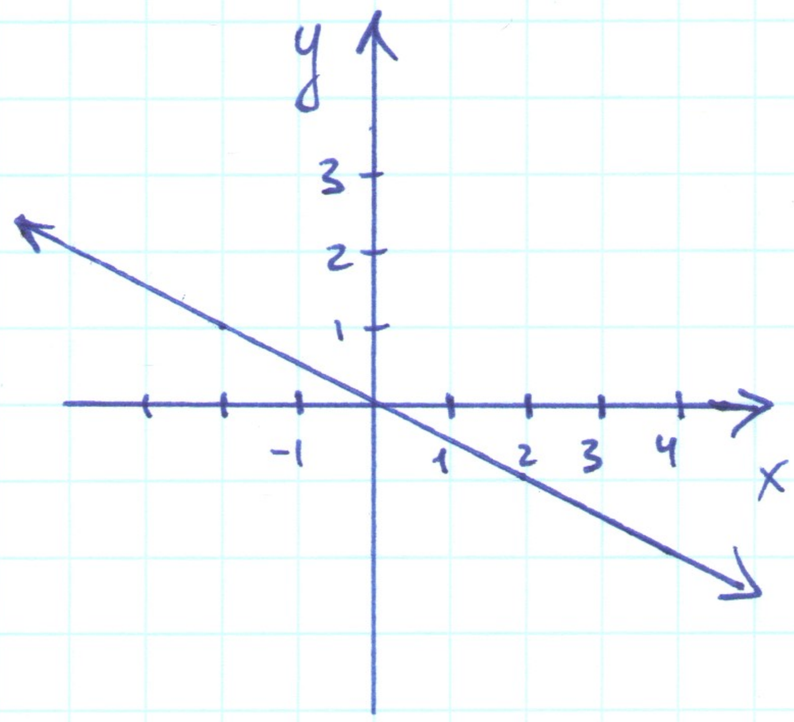
(b) $f(x) = 4x^2\sqrt{x^2+10}$

(c) $f(x) = 4x^2 - 7x + 5$

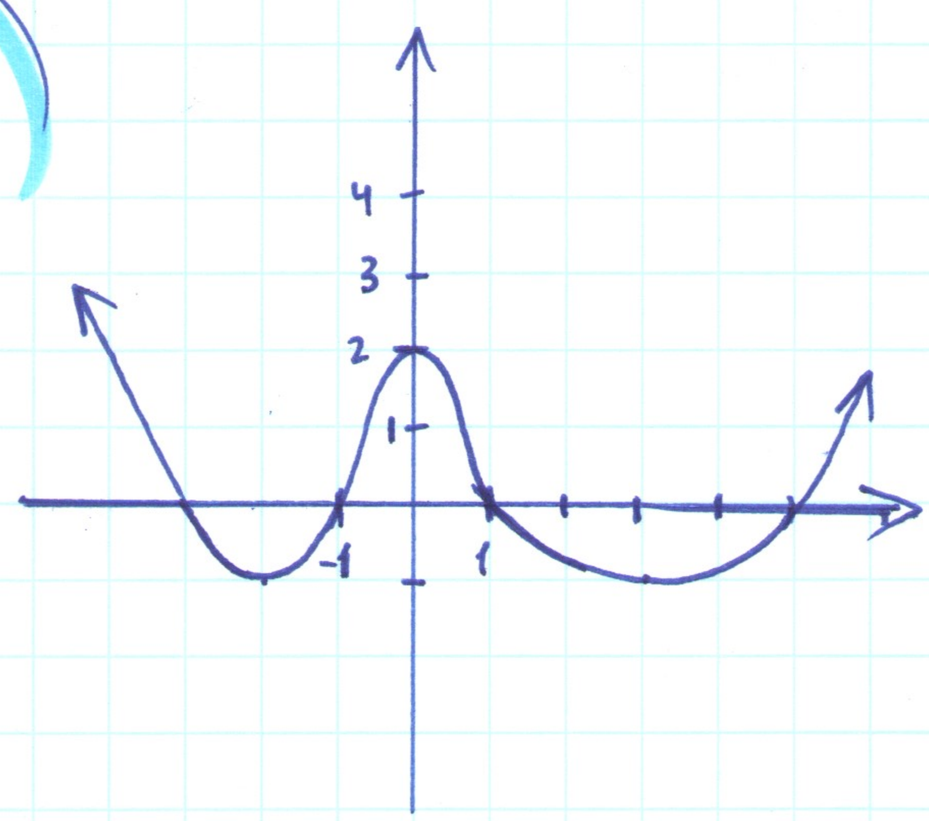
(d)



(e)



(f)



8) graph each piecewise function, use the graph to determine the range.

(a) $$f(x) = \begin{cases} 5, & \text{if } x \le -2 \\ 3, & \text{if } x > -2 \end{cases}$$

(b) $$f(x) = \begin{cases} -x, & \text{if } x < 1 \\ x^2, & \text{if } x \ge 1 \end{cases}$$