Functions Review (Day 2)
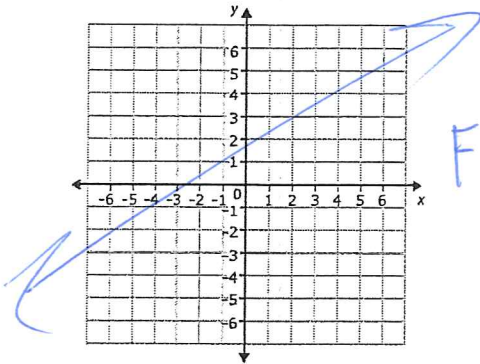
Key

A function is something that must pass the **vertical line test (VLT).** The vertical line test simply means we pass a vertical line across our graph and then we have two possibilities:
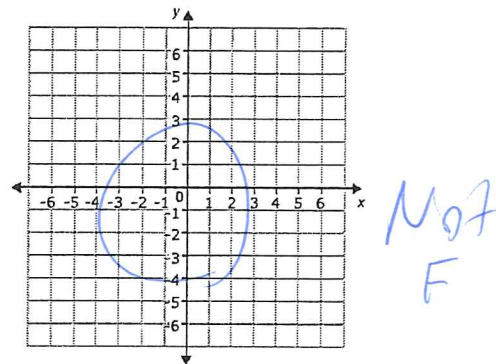
1) The vertical line touches the graph at only one spot at a time = It is a function!   OR
2) The vertical line touches the graph more than once at a certain time = It is not a function.

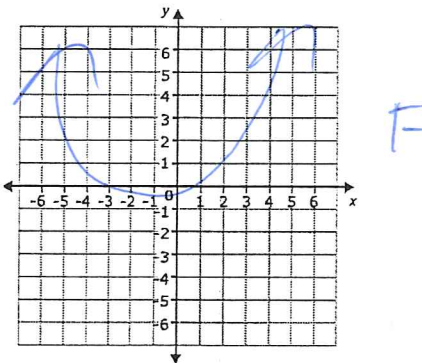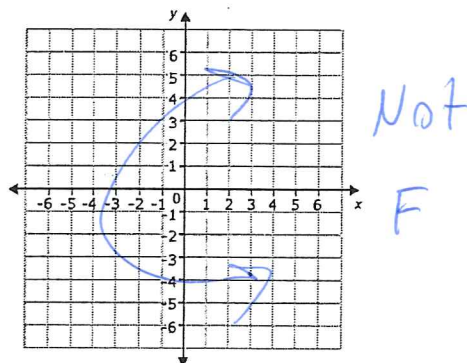1) Decide whether the following are functions or not by using the vertical line test.
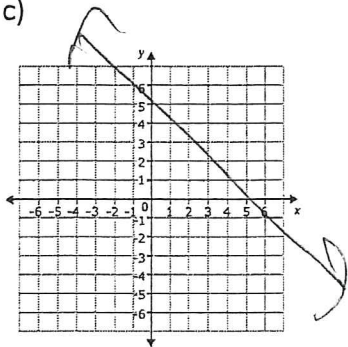
a)

F

b)

Not F

c)

F

d)

Not F

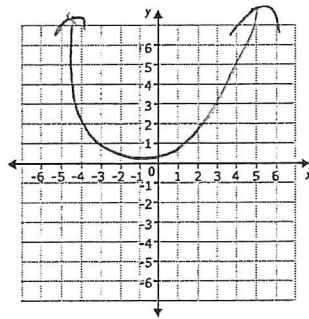4) (Continued): Find the domain and range of the following:
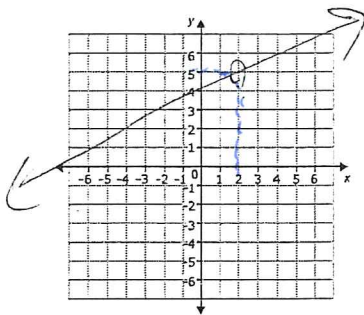
c)

D: All real

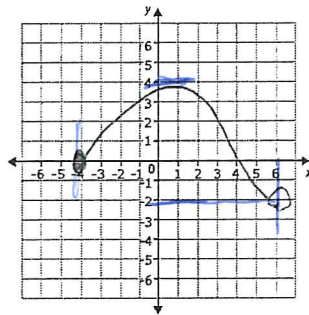R: All real

d)

D: All real

R: y ≥ 0

e)

D: All real except 2

R: All real except 5

f)

D: $-4 \leq x < 6$

R: $-2 < y \leq 4$

5) Add and subtract the following functions.

a) $(6x^2 + x - 4) + (3x - 4 + 2x^2)$

$6x^2 + x - 4 + 3x - 4 + 2x^2$

$\boxed{8x^2 + 4x - 8}$

b) $(x^2 - 3x + 2x^4) - (4x^3 + 3x - 5x^2)$

$x^2 - 3x + 2x^4 - 4x^3 \ominus 3x + 5x^2$

$\boxed{6x^2 - 6x + 2x^4 - 4x^3}$

c) $(x^2 - 9x) + (2x - 4x^2)$

$1x^2 - 9x + 2x - 4x^2$

$\boxed{-3x^2 - 7x}$

d) $(3x^2 - 10) - (x^2 + 2 - x)$

$3x^2 - 10 - x^2 - 2 + x$

$\boxed{2x^2 - 12 + x}$

6) Multiply/dividing the following functions. Suppose that $f(x) = x^4$, $g(x) = x - 2$, and $h(x) = 12 + x^2$

a) Find h(x) · g(x) $= (12 + x^2) \cdot (x - 2)$

b) Find $\dfrac{f(x)}{h(x)} = \dfrac{x^4}{12 + x^2}$

c) Find $\dfrac{g(x)}{h(x)} = \dfrac{x - 2}{12 + x^2}$