REFLECTIONS with SHIFTS

Key

DAY 2

***The ORDER of the transformations matters!

For Horizontal: 1) shifts
2) reflections

For Vertical: 1) reflections
2) shifts

Practice makes perfect … For each of the following graphs, you have been given f(x). List the transformation that the new equation underwent, the original points, and the new points.

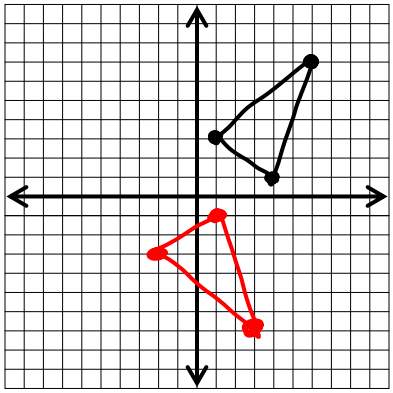
1) Original Equation: $f(x)$

New Equation: $-f(x+3)$

Transformation:

H
① left 3

V
① reflect over X



Original Points:
(1, 3)
(4, 1)
(6, 7)

minus 3 ↓ opp. ↓

New Points:
(-2, -3)
(1, -1)
(3, -7)

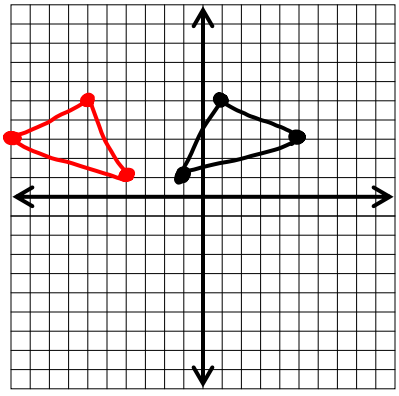
2) Original Equation: $f(x)$

New Equation: $f(-x-5)$

Transformation:

H
① right 5
② reflect over Y

V



Original Points:
(5, 3)
(1, 5)
(-1, 1)

adds ↓
take opp

New Points:
(-10, 3)
(-6, 5)
(-4, 1)

3) Original Equation: $f(x)$

New Equation: $-f(x)+4$

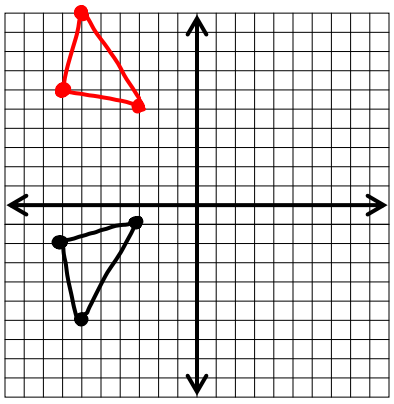
Transformation:

H

V

① reflect over X

② up 4



Original Points:

(-7, -2)

(-6, -6)

(-3, -1)

take opp / add 4

New Points:

(-7, 6)

(-6, 10)

(-3, 5)

4) Original Equation: $f(x)$

New Equation: $f(-x)-3$

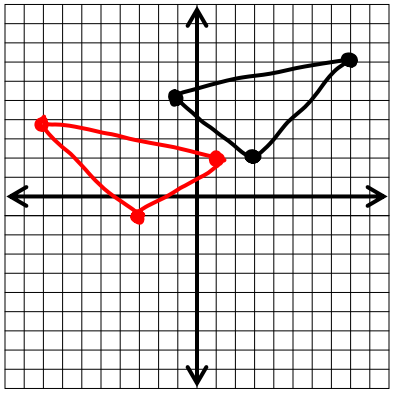
Transformation:

H

① reflect over Y

V

① down 3



Original Points:

(-1, 5)

(3, 2)

(8, 7)

take opp

minus 3

New Points:

(1, 2)

(-3, -1)

(-8, 4)

5) Original Equation: $f(x)$

New Equation: $-f(-x+1)-2$

Transformations:

H

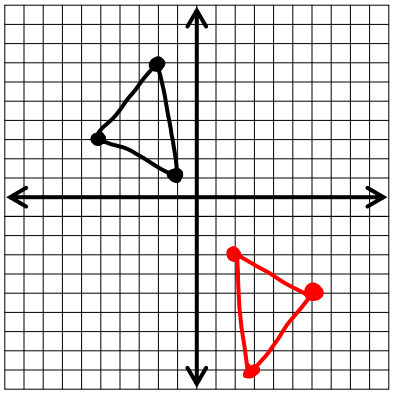
① left 1

② reflect over Y

V

① reflect over X

② down 2



Original Points:

(-1, 1)

(-5, 3)

(-2, 7)

minus 1 / take opp

take opp / minus 2

New Points:

(2, -3)

(6, -5)

(3, -9)