

Review – Transformations

Name key

Describe what is occurring in each transformation.

- 1) $f(-x)$ reflection over y
- 2) $f(x - 2)$ right 2
- 3) $f(x) + 3$ up 3
- 4) $-f(x)$ reflection over x
- 5) $\frac{1}{2}f(x)$ vertical shrink by $\frac{1}{2}$
- 6) $2f(x)$ vertical stretch by 2
- 7) $f(\frac{1}{2}x)$ horizontal stretch by 2
- 8) $f(2x)$ horizontal shrink by $\frac{1}{2}$

Order of Transformations: Vertical: str/shr, reflect., shifts
Horizontal: shifts, reflect, str/shr

For questions 9 and 10, list ***in the correct order***, the transformations performed on the parent function $f(x)$.

9) $-2f(3x+1) - 5$

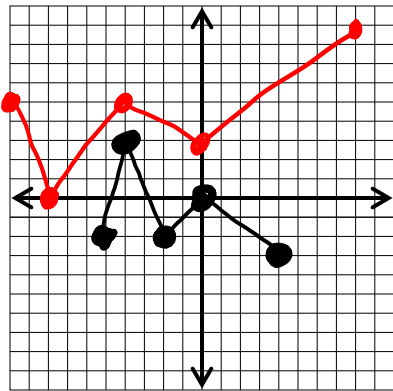
- Horizontal: (x) Vertical: (y)
- 1) left 1
 - 2) shrink by $\frac{1}{3}$
 - 3) _____
- 1) stretch by 2
 - 2) reflection over x
 - 3) down 5

10) $\frac{1}{5}f(-x+3) - 8$

- Horizontal: (x) Vertical: (y)
- 1) left 3
 - 2) reflect over y
 - 3) _____
- 1) shrink by $\frac{1}{5}$
 - 2) down 8
 - 3) _____

For 11 – 14, list the transformations ***in the correct order***; then describe how each coordinate will be affected. Lastly, plot the new points to create the transformed graph.

11) $-f\left(\frac{1}{2}x\right) + 3$

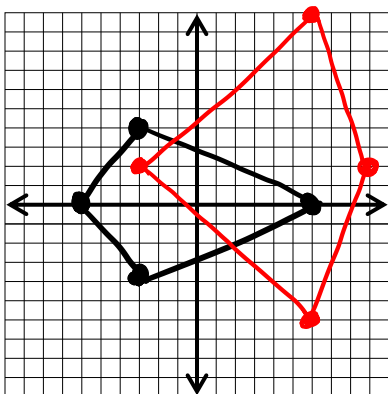


- A) Horizontal: Vertical:
- 1) stretch by 2 1) reflect over x
- 2) _____ 2) up 3
- 3) _____ 3) _____

- B) X's: multiply by 2
 Y's: take opp, add 3

C) Original Points	New Points
(-5, -2)	(-10, 5)
(-4, 3)	(-8, 0)
(-2, -2)	(-4, 5)
(0, 0)	(0, 3)
(4, -3)	(8, 9)

12) $2f(-x+3) + 2$

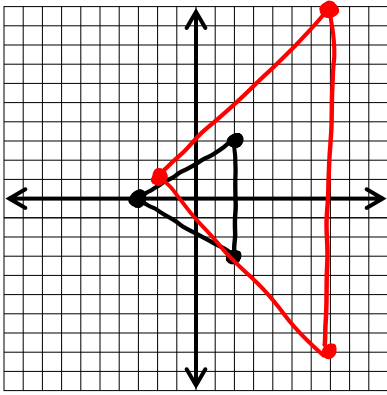


- A) Horizontal: Vertical:
- 1) left 3 1) stretch by 2
- 2) reflect over y 2) up 2
- 3) _____ 3) _____

- B) X's: subtract 3, take opp
 Y's: multiply by 2, add 2

C) Original Points	New Points
(-6, 0)	(9, 2)
(-3, 4)	(6, 10)
(-3, -4)	(6, -6)
(6, 0)	(-3, 2)

13) Transformed function: $3f(x-1)+1$



A) Horizontal:

- 1) right 1
- 2) _____
- 3) _____

Vertical:

- 1) stretch by 3
- 2) up 1
- 3) _____

B) X's: add 1

Y's: multiply by 3, add 1

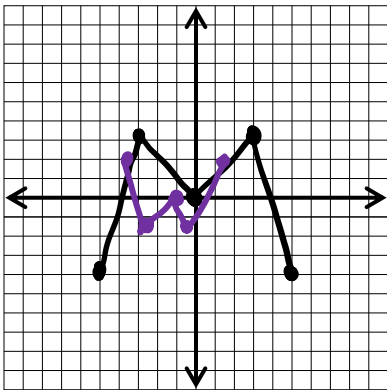
C) Original Points

- $(-3, 0)$
- $(2, 3)$
- $(2, -3)$

New Points

- $(-2, 1)$
- $(3, 10)$
- $(3, -8)$

14) $-\frac{1}{2}f(2x+2)$



A) Horizontal:

- 1) left 2
- 2) shrink by 1/2
- 3) _____

Vertical:

- 1) shrink by 1/2
- 2) reflect over x
- 3) _____

B) X's: subtract 2, multiply by 1/2

Y's: multiply by 1/2, opp. of y

C) Original Points

- $(-5, -4)$
- $(-3, 3)$
- $(0, 0)$
- $(3, 3)$
- $(5, -4)$

New Points

- $(-3.5, 2)$
- $(-2.5, -1.5)$
- $(-1, 0)$
- $(.5, -1.5)$
- $(1.5, 2)$