Math 12 · Transformations

The graph of y = f(x) is shown. State each transformation and sketch.

[#1]   y = f(x − 3)   [#2]   y = f(x + 2)   [#3]   y = f(x) + 1   [#4]   y = f(x) − 4

HT 3 right   HT 2 left   VT 1 up   VT 4 down
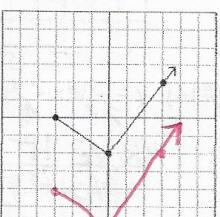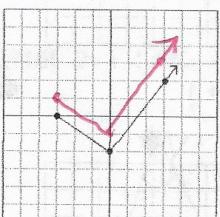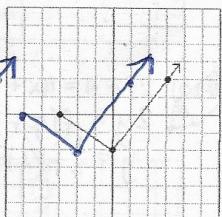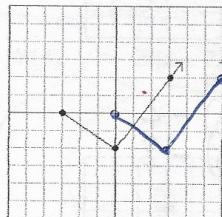
[#5]   y = f(3x)   [#6]   y = f($\frac{1}{2}$x)   [#7]   y = $\frac{1}{2}$f(x)   [#8]   y = 3f(x)

HC by $\frac{1}{3}$ HE by 2   VC by $\frac{1}{2}$ VE by 3

thinner   wider   shorter   taller

[#9]   y = f(−x)   [#10] y = −f(x)   [#11] y = f⁻¹(x)

HR   VR   I

IN X-AXIS   IN X-AXIS   IN LINE y=x

backwards   upsidedown
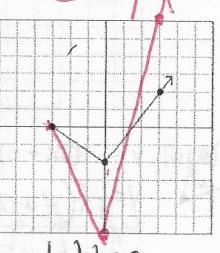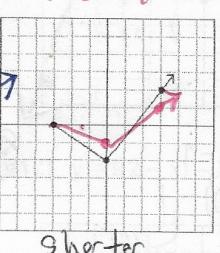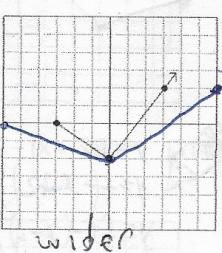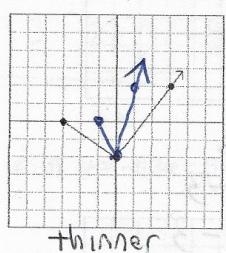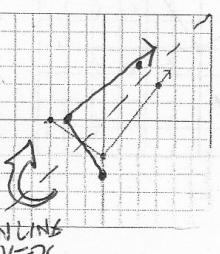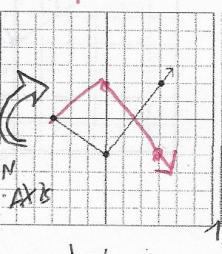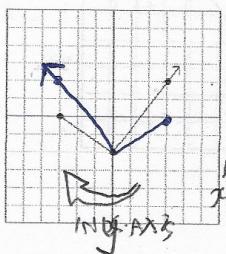
HT = Horizontal Translation
HE = Horizontal Expansion
HC = Horizontal Compression
HR = Horizontal Reflection
VT = Vertical Translation
VE = Vertical Expansion
VC = Vertical Compression
VR = Vertical Reflection
I = Inverse

INSIDE	OUTSIDE
affects x's	affects y's
Horizontal	Vertical
opposite operation	operation as is