Quiz 1-2
Identify the parent graph

1. x^3

2. x

3. $\sqrt[9]{x}$

4. $\sqrt[2]{x}$

5. $|x|$

6. 2^x

7. x^2

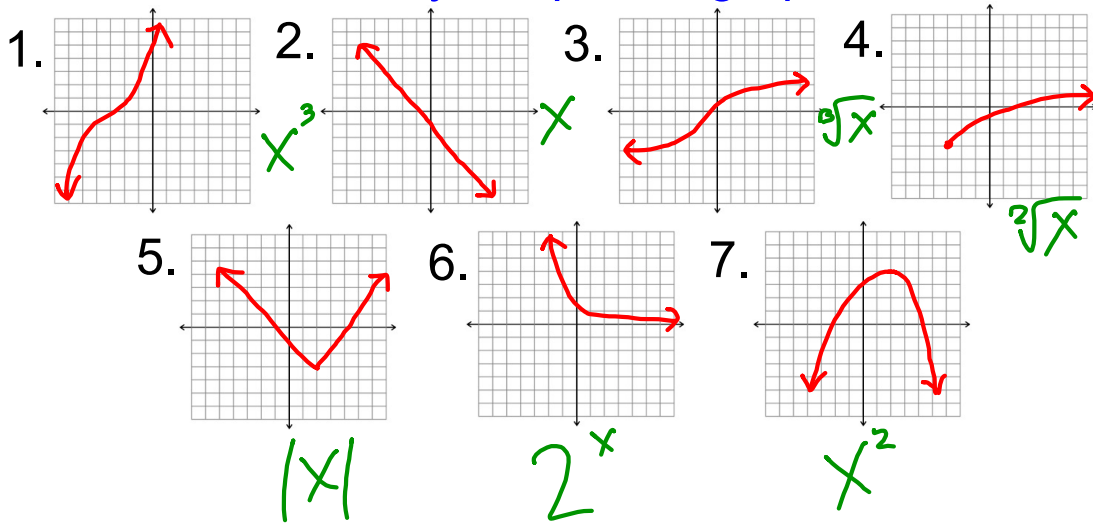
1-3: Transformations from parent functions

Objectives:
- I can identify transformations algebraically and graphically

$y = \pm af(\pm b(x \pm c)) \pm d$

(x+2) left 2

X Domain changes
y Range changes

$\pm$ if (−) reflection over x−axis

a   vertical expansion or compression

     a>1   expansion
     a<1   compression

$\pm$ if (−) reflection over y−axis

b   horizontal expansion or compression

     0<b<1   expansion
     b>1   compression

c   translation left or right
     (+) left   (-) right   ] x's lie

d   translation up or down
     (+) up   (-) down

$y = \pm af(\pm b(x \pm c)) \pm d$

reflect X-axis

V.S.
(y)

reflect y-axis

H.S.
(x)

R or L
x's lie

U or D

Information to remember about transformations....

x's lie

any change to the domain (x's) is opposite of what appears in the equation

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Determine the parent function, then describe the transformations:

1. $y = -2|x-3|+1$

   -reflect x-axis
   - V.S. by 2
   - right 3
   - up 1

2. $y = \underline{2} \bullet \underline{2^{x+3}}$

   - V.S. by 2
   - left 3

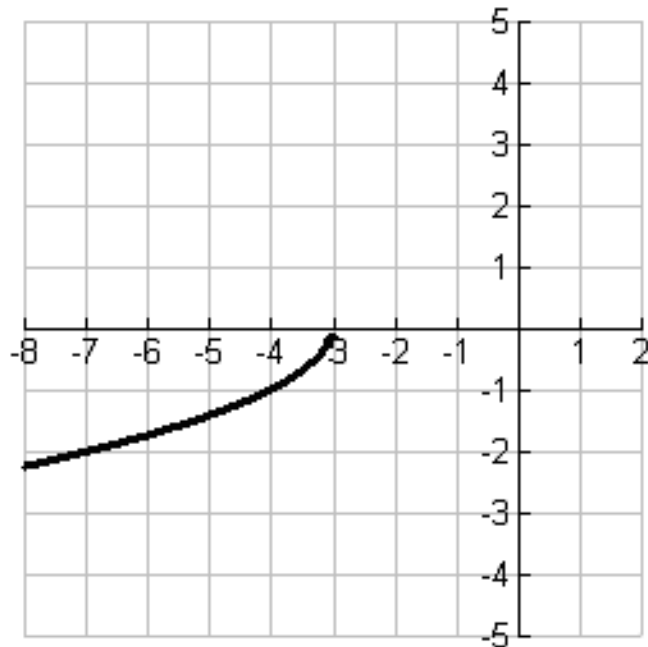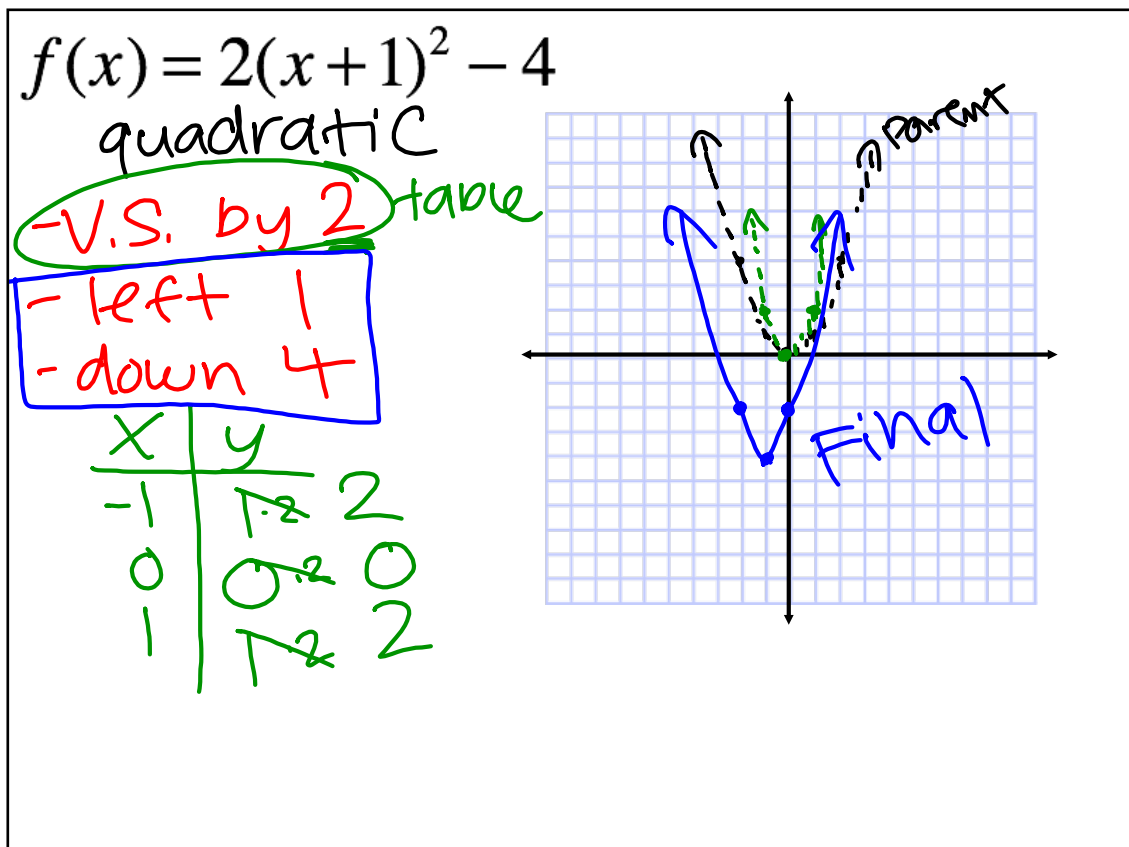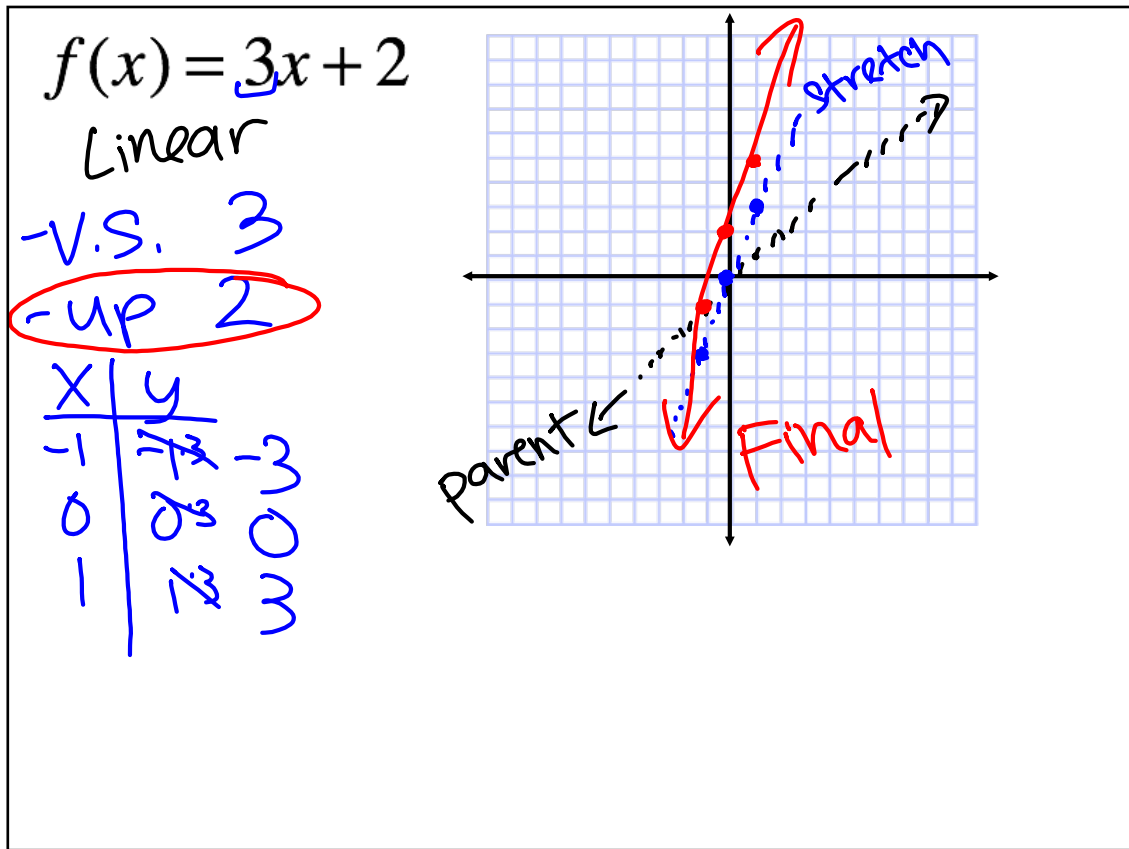3. $y = \dfrac{-\sqrt{x-4}}{3}$

4. $y = (x-5)^2$

   -right 5

Write an equation to represent the transformed function:

-up 3
-right 2 ✓
-VS 3 ✓
abs val | | ✓

$f(x) = 3|x-2|+3$

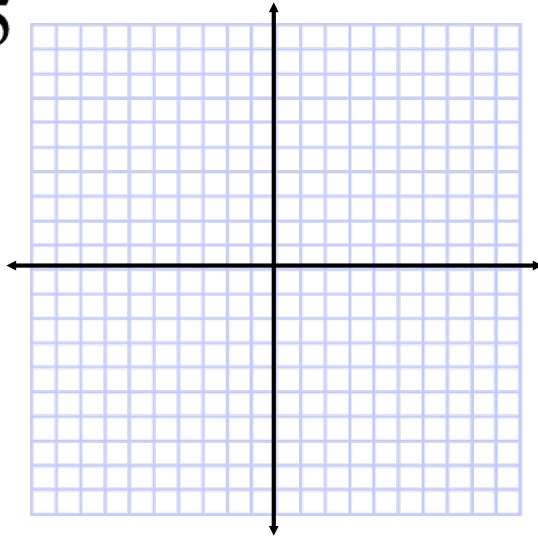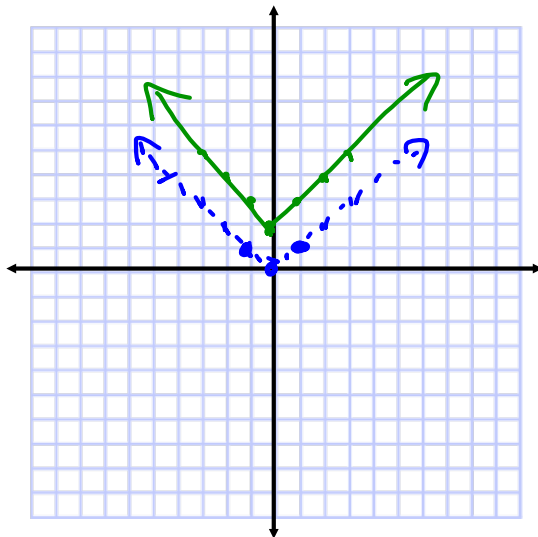Write an equation to represent the transformed function:

$f(x) = 3x + 2$

Linear

-V.S. 3

-up 2

X	y
-1	-1·3 → -3
0	0·3 → 0
1	1·3 → 3

stretch

Parent

Final

$f(x) = 2(x+1)^2 - 4$

quadratic

-V.S. by 2   table

-left 1

-down 4

X	y
-1	1·2 → 2
0	0·2 → 0
1	1·2 → 2

Parent

Final
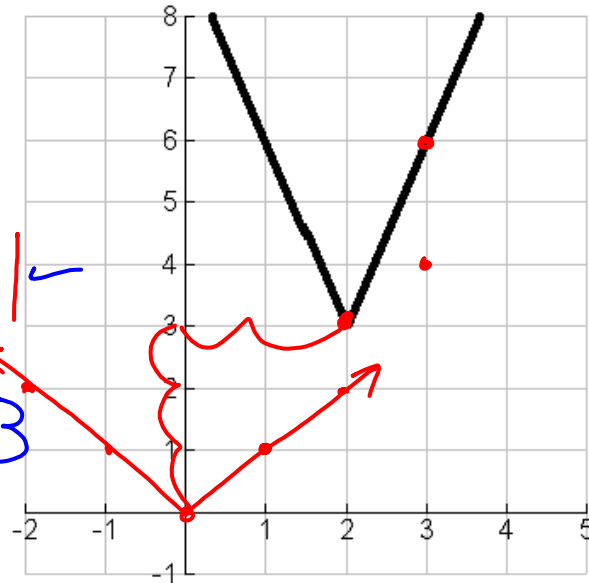
You try!

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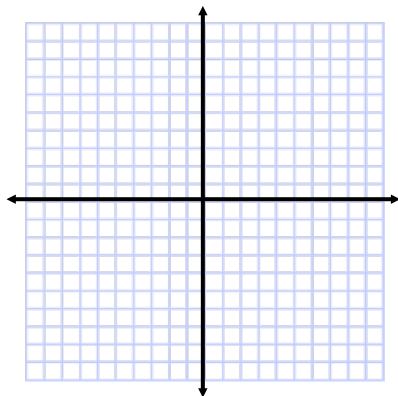
$f(x) = |x| + 2$

abs val

-up 2

Review:

Domain
Range
Increasing
Decreasing
Left End Behavior
Right End Behavior
Odd/Even/Neither
x-intercepts
y-intercepts
Maximum
Minimum
One-to-One
Asymptotes/
Discontinuities

Given f(x) sketch a graph and analyze:

$$f(x) = 2(x-3)^2 + 1$$

Domain
Range
Increasing
Decreasing
Left End Behavior
Right End Behavior
Odd/Even/Neither
x-intercepts
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Maximum
Minimum
One-to-One
Asymptotes/Discontinuities