

9/25

$$y = a f [b(x-c)] + d$$

$x+2 \rightarrow x--2 \rightarrow c=-2$
2 left

ex $y = 2(x-3)^2 + 4$

if neg \rightarrow
 a: reflection over x?

a > 1 steeper
 0 < a < 1 flatter
 y's \uparrow faster

c \rightarrow left or right
 Horizontal shift

d: $\uparrow \downarrow$
 vertical shift

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even
 $f(x) = f(-x)$
 (-1, 4) (1, 4)

\rightarrow Poly: terms even deg
 $+7 = 7x^0$

odd
 $f(-x) = -f(x)$
 (1, 4) \dots
 (-1, -4) \dots

Poly \rightarrow term odd
~~+7~~
 +7x $\ddot{\smile}$

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What does "b" do?

Horizontal Shrink/Stretch

Splits 😊

"b" → $\left(\frac{1}{b}x, y\right)$
 $\left(\frac{x}{b}, y\right)$

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2. $y = \left(\frac{1}{4}x\right)^3$

$b = \frac{1}{4} \rightarrow (4x, y)$

x	y = x ³
-2	-8
-1	-1
0	0
1	1
2	8

→

4x	y	Stays same
4(-2)	-8	-8
4(-1)	-1	-1
0	0	0
4(1)	1	1
8	8	8

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$g(x) = -2 f \left[\frac{1}{2} (x-3) \right] + 1$

x	f(x)
-2	5
0	-2
2	4
4	5

x	g(x)	x	g(x)
-1	-9	-1	-9
3	5	3	5
7	-7	7	-7
11	-9	11	-9

$b = \frac{1}{2}$ $2x$ y
 $c = 3$ $2x+3$ y
right
 $A = -2$ $2x+3$ $-2y$
 $d = 1$ $2x+3$ $-2y+1$
up 1

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y values stretched by 2 & flipped over y axis
 $y = -2 f [2(x+3)] - 4$
 shifted 4 down
 3 left

$a = -2$
 $y = -2 f [2(x+3)] - 4$
 $d = -4$
 $c = 3$ left
 -3
 $* b = 2$

* X coordinates shrink by a factor of $\frac{1}{2} \rightarrow \frac{1}{2}y \therefore b =$

$y = |x|$

x

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