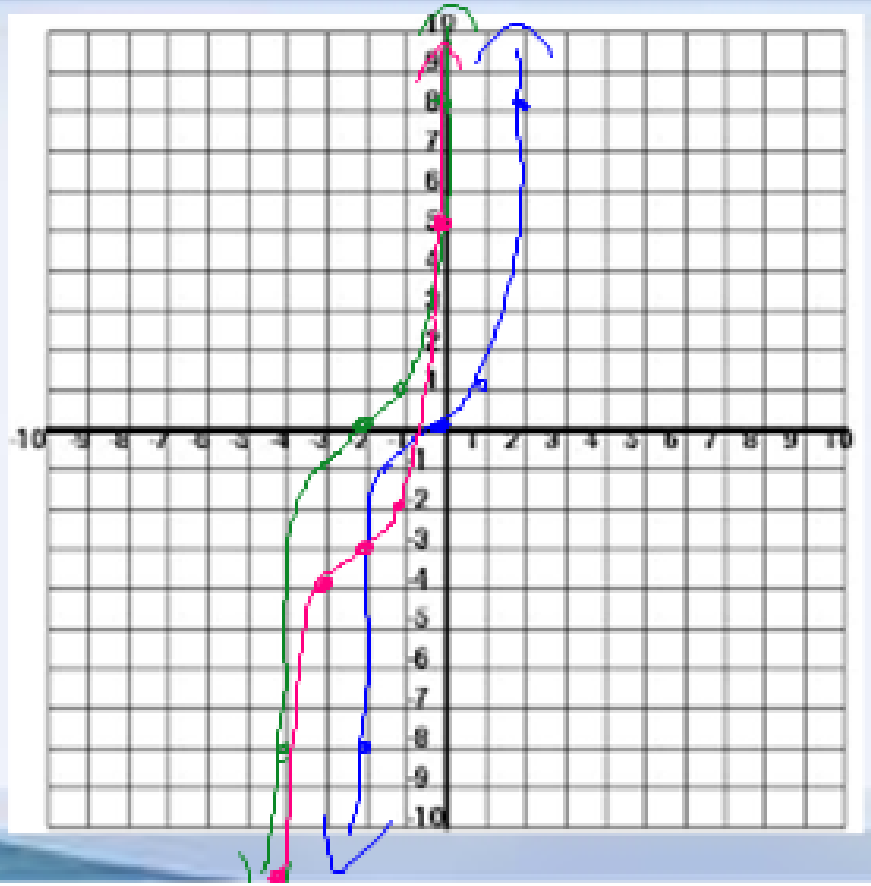
Take out yesterday's packet & Worksheet

Grab a Calculator

Homework Questions?



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

$f(x) = x^3$

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

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

33

$(1, 3)$ $\quad y = f(x)$

$(1, 6)$ $\quad y = 2(f(x))$

(34) $(4, 2)$ $y = f(x)$

$y = f(2x)$

SECTIONS 2.5B

GRAPHING TECHNIQUES; COMPRESSIONS & STRETCHES DAY 2

Graph the following:

x^2

V.S.

$9x^2$ ← skinny & tall

h.c.

$(3x)^2$ ← skinny & tall

$(3x)^2 = 3^2 \cdot x^2 = 9x^2$

Graph the following:

x^3

$27x^3$ ← skinny & tall

$(3x)^3$ ← skinny & tall

$(3x)^3 = 3^3 \cdot x^3 = 27x^3$

Graph the following:

$\sqrt[3]{x}$

$\sqrt[3]{8x}$ ← taller.

$2 \cdot \sqrt[3]{x}$ ← taller

$\sqrt[3]{8x} = \sqrt[3]{8} \cdot \sqrt[3]{x} = 2 \cdot \sqrt[3]{x}$

Graph the following:

$\sqrt{x}$

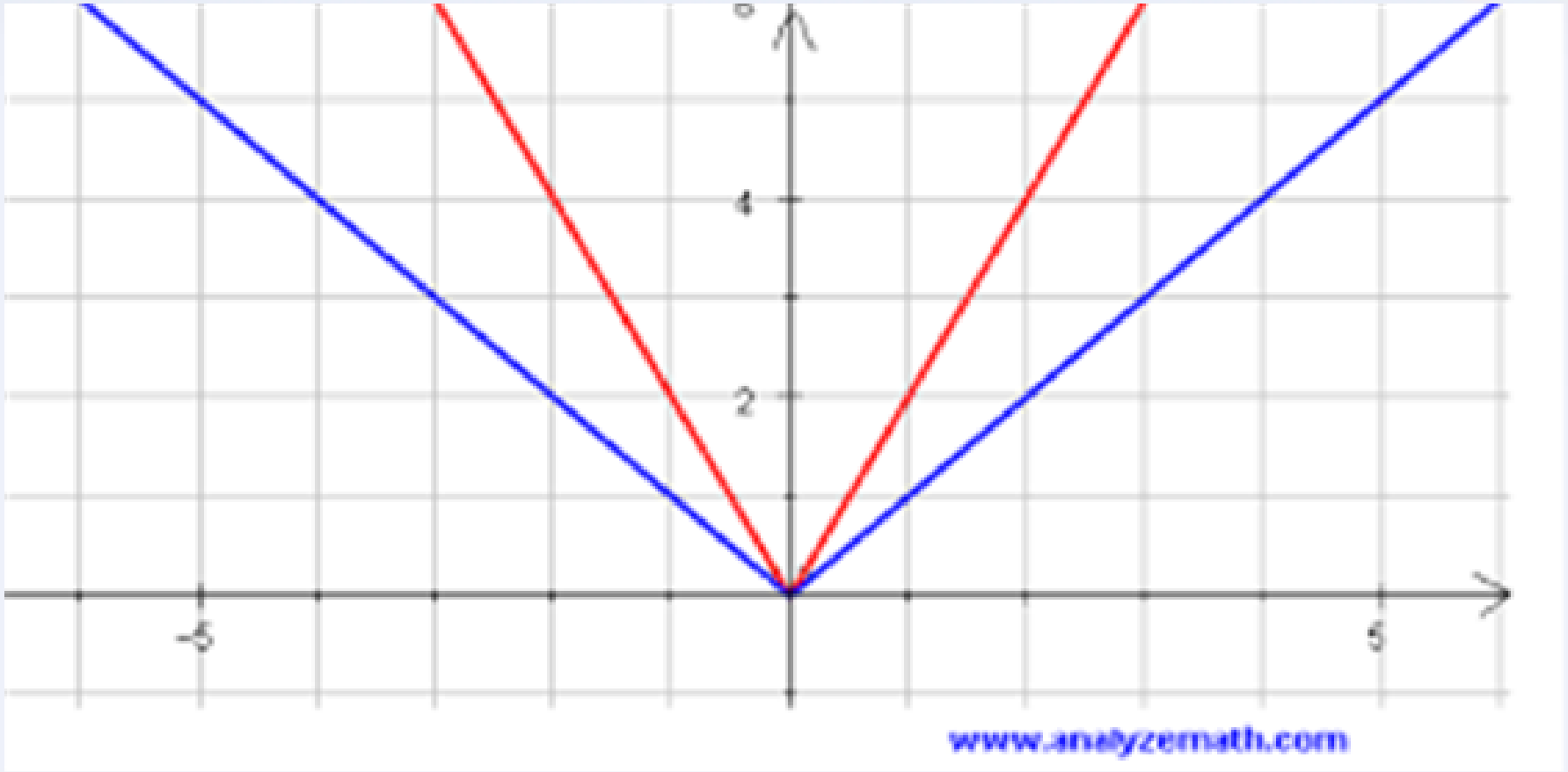
$\sqrt{4x}$ ← taller

$2\sqrt{x}$ ← taller

$\sqrt{4x} = \sqrt{4} \cdot \sqrt{x} = 2 \cdot \sqrt{x}$

Tall and Skinny

Vertical Compression = Horizontal Stretch



Horizontal Compression = Vertical Stretch

Vertical Compression/Stretch

When a number, a, is multiplied on the outside
$f(x) = af(x)$

If $a > 1$, it is a stretch

If $0 < a < 1$, it is a compression

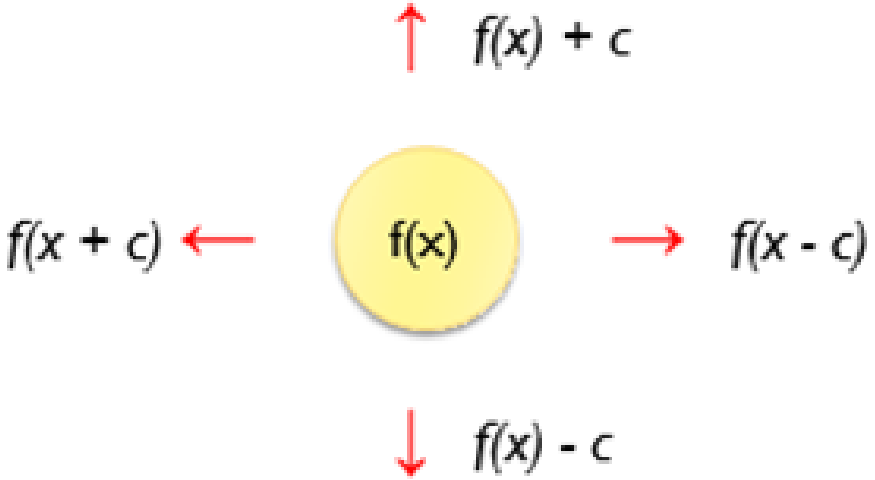
Horizontal Compression/Stretch

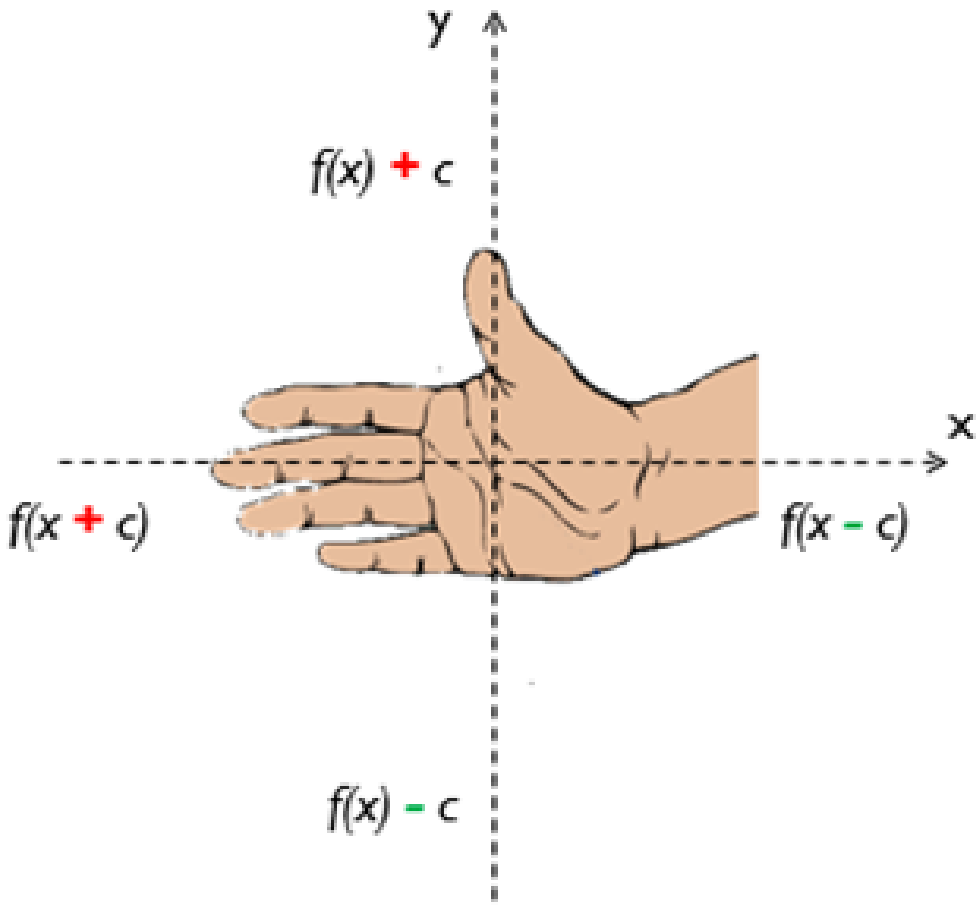
When a number, a, is multiplied on the inside
$f(x) = f(ax)$

If $a > 1$, it is a Compression

If $0 < a < 1$, it is a Stretch

Conclusion





Horizontal is opposite what you think....

$(x+2)^2$ <--- Actually moving neg. 2 horizontally.

$|2x|$ <--- Actually compresses horizontally.

Vertical	Horizontal
Outside	Inside
$a > 1$ = stretch	$a > 1$ = compression
$a < 1$ = compression	$a < 1$ = stretch.

Inside Hor.

$f(x) = (x-2)^2$

2 units right

$f(x) = x^2 - 5$

down 5 units

$f(x) = (3x)^3$

Outside Vert.

$f(x) = 3\sqrt{x}$

V. S.

$f(x) = |.5x|$

H. stretch

$f(x) = \sqrt{\frac{1}{2}x}$

H.S.

$f(x) = \frac{1}{2}|x|$

$f(x) = 3\sqrt{x}$

$f(x) = \frac{1}{2}\sqrt{x}$

$f(x) = 26|x|$

$f(x) = 3x^2$

$f(x) = (3x)^2$

$f(x) = |2x|$

homework

P.108

#25, 26, 33, 34, 47, 48, 50

List if its a stretch or compression and by how much.

Work on Worksheet

$y = A\sin(Bx + C) + D$

Vertical Stretch/ Compression

(Changes the amplitude)

Horizontal Stretch/ Compression

(Changes number cycles in 2π)

Horizontal Translation

(Moves left or right)

Vertical Translation

(Moves up or down)

Don't forget
Please Excuse My Dear Aunt Sally:
Parenthesis, Exponents,
Multiplication and Division,
Addition and Subtraction!