What's Going On?

Checking In Homework Logs

Minds on A Change in Notation

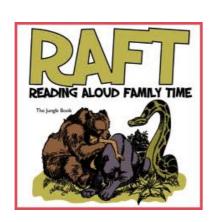
Action! g(x) = af(x - d) + c

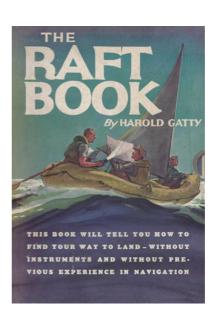
Consolidation Tell me about myself.

Learning Goal - I will understand the effects of the constants *a*, *d* and *c* on our parent functions.

Checking In

R.A.F.T.





Checking In

Homework Logs

Checking In

F.F.M.

Determine the inverse of the given function.

$$h(x) = 3\sqrt{x+1} - 4$$
Let $y = h(x)$

$$y = 3\sqrt{x+1} - 4$$
Switch the variables
$$x = 3\sqrt{y+1} - 4$$
Solve for y

$$x = 3\sqrt{y+1} - 4$$

$$x + 4 = 3\sqrt{y+1}$$

$$3$$

$$(\sqrt{y+1})^{2} = (x+4)^{2}$$

$$y + 1 = (x+4)^{2}$$

$$y = (x+4)^{2}$$

$$y = (x+4)^{2}$$

What's happening at

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Soooo much!

Minds on

A Change in Notation

$$y = a(x - h)^{2} + k$$
becomes...
$$g(x) = a(x - d)^{2} + c$$

Minds on

A Change in Notation

$$y = a(x - h)^{2} + k$$

becomes...
 $g(x) = a(x - d)^{2} + c$

Cives us the x-value of vertex

If d is positive, the curve has been shifted
to the right. $f(x) = (x-3)^2$ If d is negative, the curve has been shifted
to the left. $f(x) = (x+2)^2$

C: Gives us the Y-value of the vertex.

If c is positive, the curve has been shifted up.

If c is negative, the curve has been shifted down.

Minds on

A Change in Notation

$$y = a(x - h)^2 + k$$

becomes...

$$g(x) = a(x - d)^2 + c$$

Why not f(x)?

$$g(x) = af(x - d) + c$$

This function describes a transformation of the graph of f. f(x) can be:

$$f(x) = x^{2}$$

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

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

$$f(x) = |x|$$

$$g(x) = af(x - d) + c$$

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

 $g(x) = a(x - d)^2 + c$

$$g(x) = af(x - d) + c$$

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

$$g(x) = a\sqrt{x-d} + c$$

$$g(x) = af(x - d) + c$$

When
$$f(x) = \frac{1}{x}$$

$$g(x) = \frac{a}{x - d} + c$$

OR

$$g(x) = a \sqrt{\frac{1}{x - d}} + c$$

$$g(x) = af(x - d) + c$$

When
$$f(x) = |x|$$

$$g(x) = a |x - d| + c$$

$$g(x) = af(x - d) + c$$

This function describes a transformation of the graph of f. f(x) can be:

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

a: reflection in the x-axis

- when a is negative

vertical stretch or compression

- stretch when |a| > 1
- compression when |a| < 1

d: horizontal translation

- to the right when d is positive
- to the left when **d** is negative

c: vertical translation

- up when **c** is positive
- down when c is negative

Consolidation

Tell me about myself.

$$f(x) = 2|x+5|-1$$

I have been:

vertically stretched by a factor of 2, shifted 5 units to the left, shifted 1 unit down.

$$g(x) = \frac{3}{x-4} + 5$$

I have been:

vertically stretched by a factor of 3 shifted 4 units to the right, shifted 5 units up.

$$h(x) = 0.25\sqrt{x+1} - 4$$

I have been:

vertically compressed by a factor of 0.25 shifted 1 unit to the left, shifted 4 units down.

Consolidation

Homework!

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