

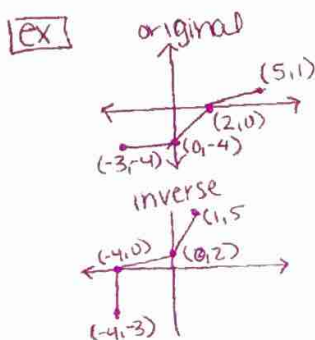
inverses

- notation: if $g(x)$ is the original then $g^{-1}(x)$ is the inverse. If the inverse is a function.

Solve methods

• graph

- reflect over $y=x$
OR
- flip the coordinates
 $(x,y) \rightarrow (y,x)$



• algebraically

- ① change $f(x)$ to y
- ② switch x & y
- ③ solve for y
- ④ use correct notation

ex

$$k(x) = 2x - 4$$
$$y = 2x - 4$$
$$x = 2y - 4$$
$$x + 4 = 2y$$
$$\frac{x+4}{2} = y$$
$$\boxed{\frac{x+4}{2} = k^{-1}(x)}$$

logs

log form \longleftrightarrow exponential form

$$x = \log_b y$$

$$y = b^x$$

ex $\log_2 16 = 4 \rightarrow 2^4 = 16$

Solving

1. if needed set equal to x or a variable
2. rearrange in exponential form
3. solve for the missing piece
 - \rightarrow may need to use common bases
 - \rightarrow if no common base use change of base formula

$$\log_b a = \frac{\log a}{\log b}$$

equation → graph

ex $y = 4 \log_4(x-1) + 2$

1. PF & inverse PF

PF: $y = \log_4 x$
 inverse PF: $y = 4^x$

2. list transformations

VD by 4
 Right 1
 up 2

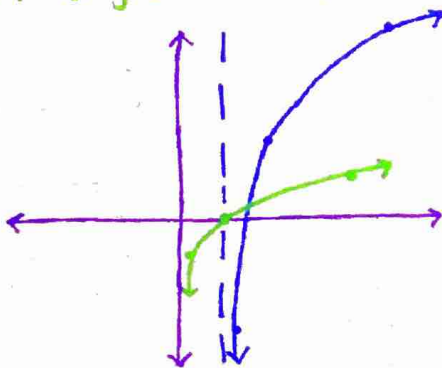
3. find key pts of inverse PF

x	y
-1	1/4
0	1
1	4

4. swap x & y from step 3 to get key pts for PF (log eq)

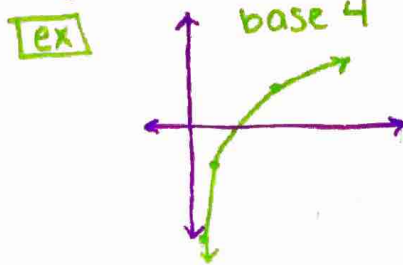
x	y
1/4	-1
1	0
4	1

5. graph PF & final graph
 * make to include asymptote
 PF is green final is blue



multiply y's by 4, right 1, up 2

graph → equation



1. PF
 $y = \log_4 x$

2. left/right (look at asymptote should be at y-axis)

none

3. up/down (look at middle pt, should be at x-axis)

down 1

4. vertical dilation (vertical space between pts, should be 1)

VD by 2

5. horizontal dilation (spaces from 3rd pt to asymptote should be the base)

* to find you do spaces away base

$\frac{2}{4} = 1/2$ HD by 1/2

6. write equation

$y = 2 \log_4(2x) - 1$

Application problems

1. remember the formula

$$A = P(1+r)^x \text{ growth}$$

OR

$$A = P(1-r)^x \text{ decay}$$

Where A is the final value

P is the starting value

r is the rate in decimal

x is the time

2. plug in what you know & solve for the missing piece.

→ solving for x : 1st get the base & exponent alone on one side.
2nd change to log form
3rd change of base & solve

* don't forget units *