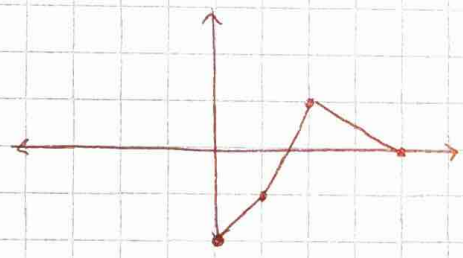
Notes 11/16

warm up

1. algebraically find the inverse of (before notation, check)
   a) $f(x) = x^2 - 5$
   b) $f(x) = 3x - 7$
   c) $f(x) = \frac{5}{x-1}$
2. find $f^{-1}(-2)$ for 1b & 1c
3. find the inverse of



Intro to Logarithms

exponential form $\longleftrightarrow$ log form

$y = b^x \longleftrightarrow \log_b y = x$

- these are inverses of each other
- common log: if there's no # for b, it's hidden & is 10

  ex $\log 4$ is actually $\log_{10} 4$.
- natural log: written as ln and always has a base of e

  → $e \approx 2.71$ & on your calculator. (same changing as above)

evaluating log & ln

Step 1 always set equal to a variable (ex. x)

Step 2 change to exponential

Step 3 solve (typically using common bases)

ex evaluate $\log 10{,}000$

#1: $\log_{10} 10{,}000 = x$

#2: $10^x = 10{,}000$

#3: $10^x = 10^4$

$\boxed{x = 4}$

ex evaluate $\log_2 32$

#1: $\log_2 32 = x$

#2: $2^x = 32$

#3: $2^x = 2^5$

$\boxed{x = 5}$

ex $\ln e^2$

#1: $\ln_e e^2 = x$

#2: $e^x = e^2$

#3: $\boxed{x = 2}$

* you can have a negative answer for a log but you cannot find the log of a negative # *

ex evaluate $\log \frac{1}{100}$

$\log_{10} \frac{1}{100} = x$

$10^x = \frac{1}{100}$

$10^x = 10^{-2}$

$\boxed{x = -2}$

OK

VS

ex evaluate $\log(-10)$

Not possible.