Math 1A: Sections 308-309
Worksheet 2: September 2

You should work on the following problems in groups of 4-5 students. It's ok if you don't finish all of them by the time we stop, but make sure everyone in your group knows **how** to solve each of the problems, and not just the solutions. When you write them down, or on the board, take turns doing the writing.

1. (Actual Midterm Question!)
   Find a formula for the inverse of the function $y = e^{\sqrt{x}}$. $= f(x)$.

Switch x and y: $x = e^{\sqrt{y}}$.

Solve for y: $\ln x = \ln(e^{\sqrt{y}})$

$\ln x = \sqrt{y}\,(\ln e)$

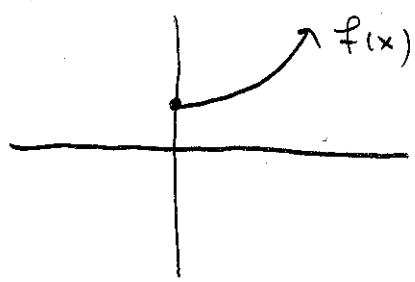
$\ln x = \sqrt{y} \Rightarrow y = (\ln x)^2$

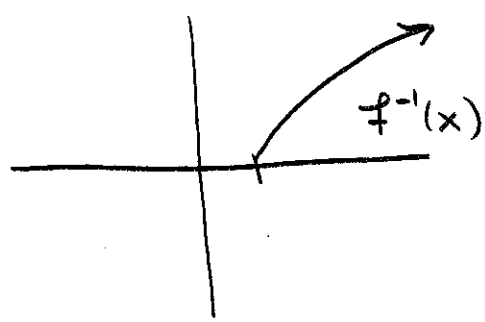
What are the domain and range of the inverse?

	$f(x)$	$f^{-1}(x)$
Domain	$[0, \infty)$	$[1, \infty)$
Range	$[1, \infty)$	$[0, \infty)$

> Notice domain/range are flipped for $f^{-1}(x)$

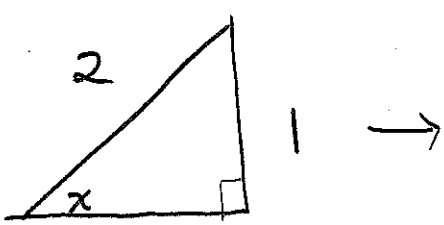
Can you sketch a (rough) graph?





2. Find the exact value of each expression:
   A. $\sin^{-1}(1/2)$ B. $\tan^{-1}(1)$ C. $\tan(\sec^{-1}(4))$.

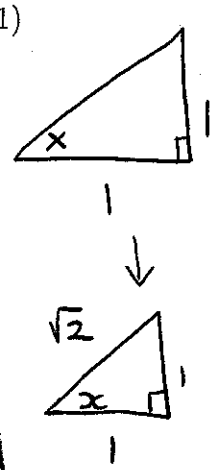
A. We want x so that $\sin x = \frac{1}{2}$.



geometry of special triangles

$x = 30°$ or $\frac{\pi}{6}$ radians

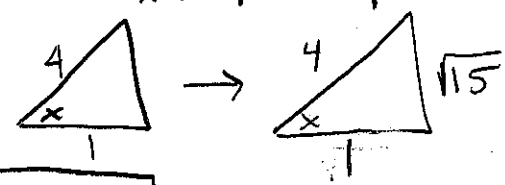
B.



$\rightarrow x = 45°$ or $\frac{\pi}{4}$ radians

C. call this guy x.

Then $\sec x = 4$ so picture is



and $\tan x = \frac{\sqrt{15}}{1}$