Due date: _____ **Name:** _____

Getting Ready for Derivatives (Part 5)

Notes

Recall the following trig identities:
$\sin^2 x + \cos^2 x = 1$
$\sin(x + y) = \sin x \cos y + \cos x \sin y$
$\cos(x + y) = \cos x \cos y - \sin x \sin y$

Also, recall that for logarithms and exponentials:
$e^{\ln x} =$ ____ and $\ln e^x =$ ____

There's also the change of base formula for logarithms:
$\log_b a = \frac{\log_c a}{\log_c b}$
For example, this allows us to convert from any base to natural logarithms: $\log_b a = \frac{\ln a}{\ln b}$

Lastly, it's time to memorize the definitions of $\sinh x$ and $\cosh x$:

$\sinh x =$ _____

$\cosh x =$ _____

Notes

ex: Rewrite $\cos(\sin^{-1} x)$ as an algebraic expression.

1. Rewrite $\sin(\cos^{-1} x)$ as an algebraic expression.

2. Rewrite $\tan(\sin^{-1} x)$ as an algebraic expression.

Practice at home

3. Try to fill in the following from memory.
   a) $\sin^2 x + \cos^2 x =$ _____
   b) $\sin(x + y) =$ _____
   c) $\cos(x + y) =$ _____
   d) $e^{\ln x} =$ _____
   e) $\ln e^x =$ _____
   f) $\log_b a =$ _____ (Change of base formula)
   g) $\sinh x =$ _____ (Definition of $\sinh x$)
   h) $\cosh x =$ _____ (Definition of $\cosh x$)

4. Rewrite $\sin(\tan^{-1} x)$ as an algebraic expression.

5. Rewrite $\cos(\sin^{-1} x)$ as an algebraic expression.