For questions: at52@rice.edu January 15

IN-CLASS ACTIVITY : FUNCTIONS

1. Write the equation of the line r through the points $A = (1, 2)$ and $B = (2, 0)$. What is the slope of r ?. Find the line parallel to r passing through $C = (1, 1)$. Do you remember how to find the slope of the lines perpendicular to r ? Write the equation of the line perpendicular to r passing through C.

2. Solve the following equations involving an absolute value :

i) $|x - 8| = 3$;

ii) $|x - 8| = x$;

iii) $\sqrt{x + 1} = |x - 1|$;

3. Find the set of solutions of the following inequalities involving an absolute value :

i) $|x + 1| > 3$;

ii) $|x^2 - 10| \leq 1$;

iii) $\sqrt{x} < |x - 2|$.

4. Complete the following tables :

x	$\sin x$	$\cos x$	$\tan x$
$3\pi/4$			
$5\pi/6$			
$-\pi/3$			
$4\pi/3$			
$-3\pi/4$			
$7\pi/12$			
$-11\pi/4$			
$-1999\pi/6$			

x	$\sin x$	$\cos x$	$\tan x$
$\pi + \alpha$			
$\pi - \alpha$			
$\pi/2 + \alpha$			
$\pi/2 - \alpha$			
$2\pi + \alpha$			
$2\pi - \alpha$			
$3\pi/2 + \alpha$			
$3\pi/2 - \alpha$			

5. Given a real number x, we define the *roof function*, denoted by $\lceil x \rceil$, as the smallest integer $n \geq x$. Compute :

i) $\lceil -1 \rceil$
ii) $\lceil 0 \rceil$
iii) $\lceil \frac{1}{2} \rceil$
iv) $\lceil -\frac{3}{2} \rceil$
v) $\lceil -0.99 \rceil$
vi) $\lceil 1.999 \rceil$

Draw the graph of the roof function for $-3 \leq x \leq 3$.