Math 125 Pre-Calculus
Kenny Shah, Fall 2017, 1.4 – 2.1

NAME: SOLUTIONS
CLASS TIME: 7 & 8 AM

QUIZ # 2

Please show all of your work for maximum credit. Good Luck!!!

1. **(3 points) Find an equation of the line that passes through the point (-3, -2) and is perpendicular to the line $3x - 4y = -24$. Write your final answer using the slope-intercept form.**

Sol. $3x - 4y = -24$; solve for y

$-3x \quad -3x$

$-4y = -3x - 24$

$\frac{-4y}{-4} = \frac{-3x}{-4} - \frac{24}{-4}$

$y = \frac{3}{4}x + 6$; $m = \frac{3}{4}$

$m = -\frac{4}{3}$; $(-3, -2)$

$y + 2 = -\frac{4}{3}(x + 3)$

$y + 2 = -\frac{4}{3}x - 4$

$-2 \quad -2$

$\boxed{y = -\frac{4}{3}x - 6}$

2. **(3 points) For the given function: $f(x) = \frac{2+x}{x-1}$; find $f\left(\frac{1}{t+1}\right)$ and completely simplify it to simple fraction.**

Sol. $f(x) = \frac{2+x}{x-1}$

$$f\left(\frac{1}{t+1}\right) = \frac{2 + \frac{1}{t+1}}{\frac{1}{t+1} - 1} \Rightarrow LCD = t+1$$

$$= \frac{(t+1)\left[2 + \frac{1}{t+1}\right]}{(t+1)\left[\frac{1}{t+1} - 1\right]} = \frac{2(t+1)+1}{1-1(t+1)} = \frac{2t+2+1}{1-t-1} = \boxed{\frac{2t+3}{-t}}$$

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3. (4 points) The accompanying data show rounded average values for Blood Alcohol Concentration (BAC) for 100-lb person, according to the number of drinks consumed.

# of Drinks	2	4	6	8	10
100 lb	0.075	0.150	0.225	0.300	0.375

(a) The data on BAC for a 100-lb person changes at a constant average rate of change. Find a formula to express Blood Alcohol Concentration, A, as a function of the number of drinks, D, consumed.

Sol: $(2, 0.075)$ & $(4, 0.150)$

$$m = \frac{0.150 - 0.075}{4 - 2}$$

$$m = \frac{0.075}{2}$$

$$\boxed{m = 0.0375}$$

$m = 0.0375$; $(2, 0.075)$

$$y - 0.075 = 0.0375(x - 2)$$

$$y - 0.075 = 0.0375x - 0.075$$

$$y = 0.0375x$$

$$\boxed{A(D) = 0.0375D}$$

(b) Interpret the slope and the vertical intercept of the formula found in part (a).

Sol: slope $= \frac{0.0375}{1}$, for every additional drink consumed, BAC increases by 0.0375

Vertical intercept $= (0, 0)$

When 0 drinks are consumed, BAC is 0, which seems reasonable.