MATH 105 - SEC 001, FALL 2010. QUIZ 2
TIME LIMIT: 25 MINUTES

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PROBLEM 1 (6 POINTS)

Line ℓ is given by $y = 4 - \frac{6}{7}\,x$, and the point P has coordinates $(3, 4)$

(1) Find the equation of the line containing P and parallel to ℓ

(2) Find the equation of the line containing P and perpendicular to ℓ

(3) Graph the equations in parts (1) and (2)

PROBLEM 2 (3 POINTS)

Let $f(x) = (x-1)^2 + \frac{x}{1-x}$. Find $f\left(1 - \frac{1}{t}\right)$.

PROBLEM 3 (2 POINTS)

x	-1	0	1	2	3	
f(x)	0	-1	-4	5	-1	

(1) Using the table above, evaluate $f(1)$, $f(0)$ and $f(3)$.

(2) Solve $f(x) = -1$ for x.

Problem 4 (5 Points)

Give a formula for a function that is undefined for $x = 8$ and for $x < 4$, but is defined everywhere else

1. Problem 5 (6 Points)

An object's velocity at time t, where $t \geq 0$ is measured in seconds, is given by $v(t) = 1.6t^2 - 6.7t + 2.5$, where $v(t)$ is measured in meters per second. When the object's velocity is greater than zero, the object is moving in the eastward direction; when its velocity is negative, the object is moving in the westward direction. When does the object change directions? Estimate your answer(s) to two decimal places and show how you derived your answer(s).

Problem 6 (3 Points)

A restaurant us open from 2 pm to 2 am each day, and a maximum of 200 clients can fit inside. If $f(t)$ is the number of clients in the restaurant t hours after 2 pm each day, what are a reasonable domain and range of $f(t)$?