

Mat 103 Quiz 5 Practice

Name: _____

Please show all your work to ensure full credit.

1. Create the equations and inequalities of the types listed below with the given solutions.

Equation	Inequality
<p>a) $\frac{\square}{\square}x + \frac{\square}{\square} = \frac{\square}{\square}$</p> <p>So that $x = -2$ is a solution to this linear equation.</p>	<p>b) $\frac{\square}{\square}x + \frac{\square}{\square} < \frac{\square}{\square}$</p> <p>So that all points satisfying the inequality $x > -2$ are solutions to this linear inequality.</p>

2. Solve the following equations and inequalities for the respective variables. If an equation is an identity, or has no solution, or has an extraneous solution, please state so. For all the inequalities write the solution in algebraic notation, interval notation, and represent the solutions graphically on a number line.

Equation	Inequality
a) $\frac{1}{5}x - \frac{3}{2} = \frac{1}{2}x - \frac{2}{5}$	b) $\frac{1}{5}x - \frac{3}{2} > \frac{1}{2}x - \frac{2}{5}$
c) $-2(1 + x) = x - 4(x + 2)$	d) $-2(1 + x) \leq x - 4(x + 2)$
e) $ 4 - 5x = 3$	f) $ 4 - 5x \geq 3$

g) $\sqrt{x+2} = 3$	h) $\sqrt{x+2} < 4$ (extra credit)
What are the similarity and differences between the corresponding equations and inequalities?	

3. Solve the equation $mx + b = y$ for x .

4. Joe can make 21 pizzas in three one hour shifts. At this rate, how long would it take him to make 60 pizzas?

5. The energy intensity of sunlight I varies inversely with the square of the distance d from the sun. On earth which is $1.5 \cdot 10^{11}$ meters from the sun, the light intensity is $1300 \frac{w}{m^2}$. (This means that on a piece of ground one meter by one meter, the solar energy comes in at about the same rate as the heat a hair dryer gives off.) Write an equation that expresses this inverse relation between I and d . Also estimate to the nearest tens, the solar energy intensity at Mars which is $2.3 \cdot 10^{11}m$ from the sun.