Math-8 Exam #1

Name: _____

This exam is closed book and notes. You may use a calculator; however, no other electronics are allowed. Show all work; there is no credit for guessed answers. All answers should be in exact values, unless you are specifically asked for an approximate value.

Helpful Stuff:

$$d = rt$$

$$\frac{1}{t_1} + \frac{1}{t_2} = \frac{1}{t}$$

$$h = h_0 + v_0 t - 16t^2$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

1). A family is going on a fishing trip to a cabin near a lake. They have a lot of stuff, so they are going to take two cars. The cars leave at the same time, take the same route, and drive at a fairly constant speed. The first car goes 70 mph and arrives one hour before the second car, which is only going 60 mph. What is the duration of each car's trip?

2). A parent tells his/her kids to wash the family car. Working alone, the first kid can wash the car 10 minutes faster than the other kid, but working together they can wash the car in 12 minutes. How long does it take for each kid to wash the car working alone?

3). A man stands on a 640 foot cliff.

a). He throws a rock *up* into the air with an initial velocity of 16 ft/s. How long does it take for the rock to fall halfway down the cliff? Use the complete-the-square method to solve - do *not* use the quadratic formula (Hint: keep the negative answer).

b). Without doing any additional calculations, how long does it take for the rock to fall halfway down the cliff if the man throws the rock *down* at 16 ft/s.

4). Solve for x, stating the answer using interval notation (Hint: you should be able to state the answer to part (b) without any extra work).

a). $|2 - 3x| < 1$

b). $|2 - 3x| \geq 1$

5). Solve for x, stating the answer using interval notation.

$$\frac{x^3 + x^2 - 2x}{x^2 - 5x + 6} < 0$$