Math 97
Review for Test #3

Names: _______________________________________________________________

Directions:
In a group of two or three, solve the following problems. We may do some problems on the board towards the end of the class. I also want you to turn your work (one per group is fine.)

Simplify the following Rational Expressions:

a. \( \frac{x^2 - 25}{x^3 - x - 20} \)  
b. \( \frac{3x^2 - 7x + 2}{2x^2 - 5x + 2} \)

c. \( \frac{12xy^2}{7y - y^2} \div \frac{6x^2}{y - 7} \)  
d. \( \frac{x^2 + 8x + 16}{x - 2} \cdot \frac{x^2 - 4}{x + 4} \)

e. \( \frac{2}{x} + \frac{3}{x + 1} \)  
f. \( \frac{2 - x}{x + 2} + \frac{x + 2}{x - 2} \)
i. Two ventilation fans are operating in an attic. Working alone, one can change the air in 5.5 hours and the other in 7 hours. How long will it take them to change the air if they are both working together?

j. According to Sir Isaac Newton, the force due to gravity varies inversely with the square of the distance between the objects. What happens to the force of gravity if you double the distance between two objects?

k. The amount of kinetic energy a moving object has varies directly with the square of its velocity. If an object moving 10 meters per second has 400 joules of energy, how much energy would the object have if it was traveling 15 joules per second?