Math-13 Sections 01 and 02

Homework #2

Due: Midnight 9/8

1. You throw a ball straight up into the air using an airgun. The ball eventually slows down due to gravity, stops, and then falls back to earth. Let h be the height of the ball (in feet) at time t (in seconds) such that the height of the ball is given by $48t - 16t^2$.
   (a) Represent this situation using function notation.
   (b) Identify the independent and dependent variables.
   (c) Where is the ball at $t = 2$ seconds?
   (d) How long does it take the ball to reach its maximum height of 36 ft?
2. The popular hamburger chain Bun-N-Burger has finally decided to go public. Their stock opens on the NASDAQ at \$25 per share and increases in price according to the function $p(t) = 25 + 5t$, where t is the number of hours that the market has been open.
   (a) Represent the function using a table with values from $t = 0$ to $t = 5$.
   (b) Interpret the statement: $p(3) = 40$.
   (c) Sketch a graph of the function.
   (d) From your graph, estimate the price of the stock at $t = 2.5$ hrs and show that point on the graph.
   (e) What does the point $(4, 45)$ on the graph represent?
3. Let $f(x) = 2x + \sqrt{x+1}$. Solve for $f(x) = 8$.
4. Determine the implicit domain for the function:

$$f(x) = \sqrt{\frac{x^2 + x - 2}{x^2 - 4}}$$