Name:

Quiz 5: §2.1-2.3

Complete the following problems to the best of your ability. **SHOW ALL OF YOUR WORK.** Unshown work will not be graded. You may use a calculator.

1. A mathematically inclined Barbarian has been recording his victories in the hopes of impressing his king. In the year 205, he won 15 battles. In the year 213, he won 119 battles.

   (a) [10] What is the average rate of change in the barbarian's victories from year 205 to year 213?

   (b) [20] Suppose this data follows a linear trend. Find a function that gives the number of victories in terms of the number of years since 200.

   (c) [15] In what year does the barbarian win 500 battles?

   (d) [15] Does this model make sense for all values of x? Why or why not?

2. [40] Find linear equations that fit the following requirements.

   (a) The line through the points $(1, 16)$ and $(-2, 4)$.

   (b) The vertical line through $(-2, \frac{3}{2})$.

   (c) A line parallel to $y = 4x - 12$ that goes through the point $(-1, 3)$.

   (d) A line perpendicular to $y = -\frac{2}{3}x - 3$ that goes through the point $(4, 0)$.