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| Group Quiz 2Dusty Wilson Math 111 – Spring 2012 No work = no credit | **Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

A certain company has fixed costs of $15,000 for its product and variable costs given by dollars per unit, where *x* is the total number of units. The selling price of the product is given by dollars per unit.

1. Formulate the functions for total cost, revenue, and profit.
2. Algebraically find and interpret the break even points.

1. Algebraically find and interpret the level of production and sales that maximizes profit.
2. Find and interpret the profit (or loss) at the production level found in (c.)

The table gives the median age of women who first marry in the given year.

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| **Year** | **Females** |
| 1900 | 21.9 |
| 1910 | 21.6 |
| 1920 | 21.2 |
| 1930 | 21.3 |
| 1940 | 21.5 |
| 1950 | 20.3 |
| 1960 | 20.3 |
| 1970 | 20.8 |
| 1980 | 22.0 |
| 1990 | 23.9 |
| 2000 | 25.1 |
| 2010 | 26.1 |

Find the best model for the data set (given the options available on the calculator) where *x* is in years since 1900. Round to two significant figures.

Use the model to find and interpret .

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| Consider .   1. Find  and . 2. Carefully sketch a graph of *f*. 3. What is the range of *f* ? Give you answer in interval notation. |  |