

71. Population Statistics The table shows the life expectancy of a child (at birth) in the United States for selected years from 1930 to 2000. (Source: U.S. National Center for Health Statistics)



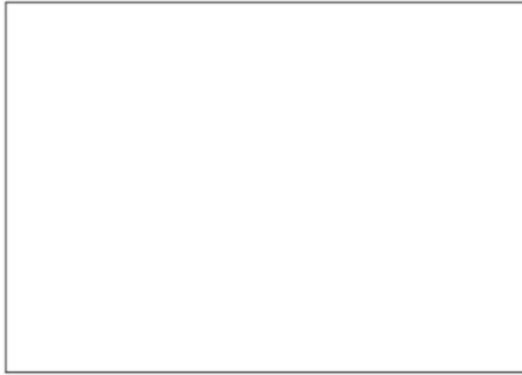
| Year | Life expectancy, y |
|------|----------------------|
| 1930 | 59.7 |
| 1940 | 62.9 |
| 1950 | 68.2 |
| 1960 | 69.7 |
| 1970 | 70.8 |
| 1980 | 73.7 |
| 1990 | 75.4 |
| 2000 | 76.9 |

A model for the life expectancy during this period is given by

$$y = \frac{59.97 + 0.98t}{1 + 0.01t}, \quad 0 \leq t \leq 70$$

where y represents the life expectancy and t is the time in years, with $t = 0$ corresponding to 1930.

- What does the y -intercept of the graph of the model represent?
- Use the *zoom* and *trace* features of a graphing utility to determine the year when the life expectancy was 73.2. Verify your answer algebraically.
- Determine the life expectancy in 1948 both graphically and algebraically.
- Use the model to estimate the life expectancy of a child born in 2010.



Xmin = _____ Ymin = _____

Xmax = _____ Ymax = _____

a) _____

b) _____

c) _____

d) _____