

Project: Consumer Credit The table shows the outstanding consumer credit (in billions of dollars) in the United States from 2001 through 2014. (Source: Board of Governors of the Federal Reserve System)

DATA	Year	Outstanding Consumer Credit
	2001	1891.8
	2002	1997.0
	2003	2102.9
	2004	2220.1
	2005	2320.6
	2006	2461.3
	2007	2615.1
	2008	2650.0
	2009	2552.3
	2010	2646.9
	2011	2755.4
	2012	2922.9
	2013	3098.8
	2014	3317.2

Spreadsheet at LarsonPrecalculus.com

- (a) Use a graphing utility to plot the data. Let t represent the year, with $t = 1$ corresponding to 2001, and let y represent the outstanding consumer credit (in billions of dollars).
- (b) Use the matrix capabilities of a graphing utility to solve the system below and find the least squares regression parabola $y = at^2 + bt + c$.

$$\begin{cases} 14c + 105b + 1015a = 35,552.3 \\ 105c + 1015b + 11,025a = 288,500.5 \\ 1015c + 11,025b + 127,687a = 2,908,284.9 \end{cases}$$

- (c) Use the graphing utility to graph the model from part (b) and the data in the same viewing window. How well does the model fit the data? Explain.
- (d) Use the *regression* feature of the graphing utility to find a quadratic model for the data. How does the model given by the graphing utility compare with the model you found in part (b)?
- (e) Use the result of part (b) or part (d) to predict the year in which the outstanding consumer credit will be \$4100 billion.