

Sales Price of Homes The table shows the median sales price S (in thousands of dollars) of existing one-family homes in the United States from 1990 to 2013. The data can be approximated by the model

$$S = \frac{0.2716t^2 - 10.1895t + 98.2468}{-8.5474t^3 + 0.0061t^2 - 0.1369t + 1}, \quad 0 \leq t \leq 23$$

where t represents the year, with $t = 0$ corresponding to 1990. (Data Source: National Association of Realtors)

DATA	Year	Median sales price, S
	1990	97.3
	1991	102.7
	1992	105.5
	1993	109.1
	1994	113.5
	1995	117.0
	1996	122.6
	1997	129.0
	1998	136.0
	1999	141.2
	2000	147.3
	2001	156.6

DATA	Year	Median sales price, S
	2002	167.6
	2003	180.2
	2004	195.2
	2005	219.0
	2006	221.9
	2007	217.9
	2008	196.6
	2009	172.5
	2010	172.9
	2011	166.1
	2012	176.8
	2013	197.1

- Use a graphing utility to create a scatter plot of the data.
- Use the model to approximate the median sales prices for each year from 1990 through 2013.
- Compare the estimated to the actual data to determine whether the model is a good fit for the data. Explain.
- Examine the scatter plot from part (a). Is there another type of model that fits the data? Explain your reasoning.
- Use the *cubic regression* feature of a graphing utility to find a model for the data..
- Use a graphing utility to plot the data and graph the given rational model and the model that you found in part (e) in the same viewing window.
- Use each model to predict the median sales price of an existing one-family home in 2020. Which model should be used to predict future values? Explain your reasoning.