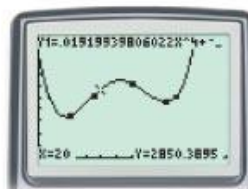




b. Because x represents the number of years since 1950, $x = 20$ represents the year 1970. Find $P(20)$.

The quartic model gives the number of high school graduates (in thousandths) in 1970 as 2850. The actual value given in the table is 2757, which differs by only 93 students.



TRY THIS

Find a quartic regression model for the data in the table below.

x	2	5	6	9	11
y	4	16	11	14	9

CRITICAL THINKING

The function in Example 3 models the number of high school graduates for the period from 1960 to 1994. Explain why this function may not be a good model for estimating the number of high school graduates after 1994.

Exercises



Communicate

- Describe the graph of $f(x) = 2x^2 + x^3 + 3x + 1$. Include any turning points, its continuity, and its end behavior.
- Using your own words, define a local maximum and a local minimum.
- Describe the four possibilities for the end behavior of the graph of a polynomial function.
- Using your own words, define increasing and decreasing functions.

Guided Skills Practice

- Graph $P(x) = x^3 + x^2 - 2x$. Approximate any local maxima or minima to the nearest tenth. Find the intervals over which the function is increasing and decreasing. (**EXAMPLE 1**)

Describe the end behavior of each function. (**EXAMPLE 2**)

- $P(x) = x^6 + x^4 + x + 1$
- $P(x) = x^4 + 1 + x^3 - x^5$

- Find a quartic regression model for the data in the table below. (**EXAMPLE 3**)

x	1	2	3	4	5
y	2	3	2	1	5