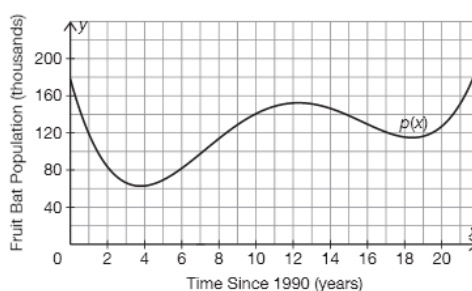


LESSON 4.1 Assignment

Name _____ Date _____

Don't Take This Out of Context
Analyzing Polynomial Functions

1. Biologists conducted a 20-year study of fruit bat populations in a small African country. The polynomial function $p(x)$ models the fruit bat population from the year 1990 (when $x = 0$) to the year 2010 (when $x = 20$).



- a. Determine the intervals over which the fruit bat population increased.
- b. Determine the intervals over which the fruit bat population decreased.
- c. During the 20-year study, a law was passed that banned the use of a pesticide known to be harmful to the fruit bat. Predict the year in which the law was passed. Explain your reasoning.

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LESSON 4.1 Assignment

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- d. During the 20-year study, a logging company signed a 6-year government contract to harvest the timber from a large forest known to be the habitat of the fruit bat. Predict the year in which the company started harvesting the timber. Explain your reasoning.
- e. Estimate when the fruit bat population was 100,000. Explain your reasoning.
- f. At what point during the 20-year study was the fruit bat population the highest? What was the population at that time?
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- g. Determine the average rate of change of the fruit bat population from the year 1994 to the year 2002. Explain the meaning of your answer in terms of the problem situation.
- h. Determine the average rate of change of the fruit bat population over the entire 20-year study. Explain the meaning of your answer in terms of the problem situation.