Questions on 5.3/5.4

Worksheet?

No quiz today, but the worksheet needs to be turned in today.

Grab a book and tear out chapter 6 (pgs. 423-510)

Feb 27-8:47 AM

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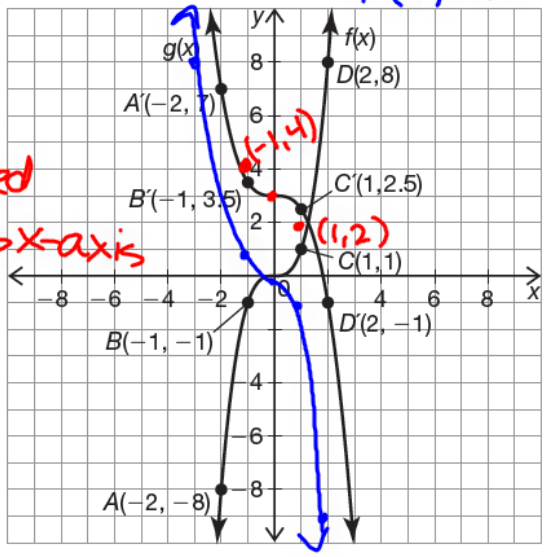
1. Analyze the graphs of the functions $f(x)$ and $g(x)$.

$g(x) = -0.5x^3 + 3$

$f(x) = x^3$

$(x-3)^2 + 2$



$g(x)$ ↑3 reflected across x-axis dilated by $\frac{1}{2}$

a. Write the equation for $f(x)$.

b. The function $g(x)$ is a transformation of the function $f(x)$. Describe the transformations

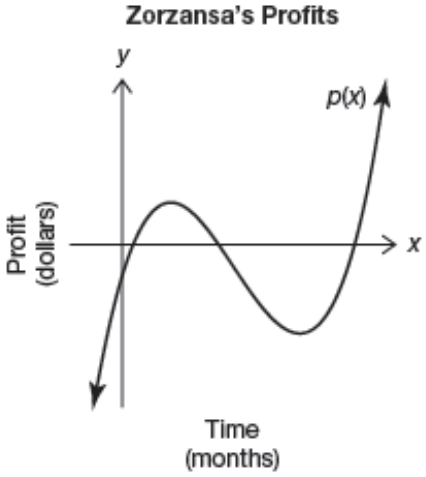
Nov 17-11:23 AM

Don't Take This Out of Context
Analyzing Polynomial Functions

6.1

pg.425-426 in your book

The polynomial function $p(x)$ models the profits of Zorzansa, a video game company, from its original business plan through its first few years in business.



1. Label the portion(s) of the graph that model each of the memorable events in the company's history by writing the letter directly on the graph. Explain your reasoning.

   a. The Chief Executive Officer anxiously meets with her accountant.

   b. The highly anticipated game, *Rage of Destructive Fury II*, is released.

   c. The company opens its doors for business for the first time.

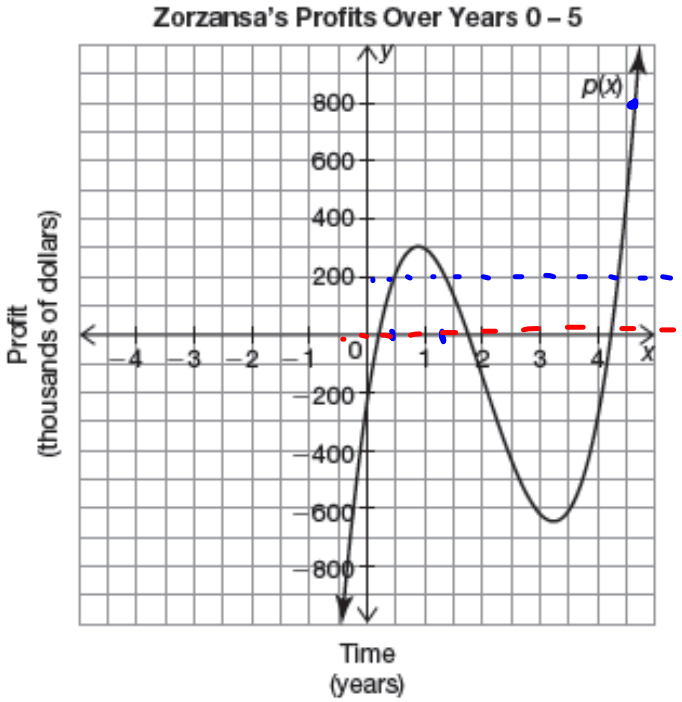
   d. The company reaches its first short-term sales goal just as the holiday shopping season ends.

finish e-h and #2 on pg.427 in your book

Oct 9-8:12 AM

pg.428 in your book.

The cubic function $p(x)$ models Zorzansa's total profits over the first five years of business.



1. Use the graph to estimate when Zorzansa's achieved each profit. Then explain how you determined your estimate.

   a. $800,000

   approx. 4.5yrs

   b. $200,000

   approx $\frac{1}{2}$ yr

   c. greater than $200,000

   (0.5, 1.3) and (4.4, ∞)

   d. the company is losing money (decreasing or −?)

   (0.8, 3.3) ← (0, 0.2) ∪ (1.7, 4.2)

   e. the company is making a profit. (above 0)

   (0.2, 1.7) ∪ (4.2, ∞)

pg.430 in your book.

The **average rate of change** of a function is the ratio of the change in the dependent variable to the change in the independent variable over a specific interval. The formula for average rate of change is $\frac{f(b) - f(a)}{b - a}$ for the interval (a, b). The expression $b - a$ represents the change in the input values of the function f. The expression $f(b) - f(a)$ represents the change in the output values of the function f as the input values change from a to b.

not in your book.

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 $x = 20$).

h) $\frac{180000-125000}{0-20}$

g) $\frac{150000-60000}{12-4}$

$= \frac{90000}{8} = \frac{45000}{4}$

$= \frac{11250}{1}$

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.

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?

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.

Homework
Finish Lesson 6.1

Oct 21-8:47 AM