

LESSON 4.1 Skills Practice

Name _____ Date _____

**Don't Take This Out of Context
Analyzing Polynomial Functions**

Vocabulary

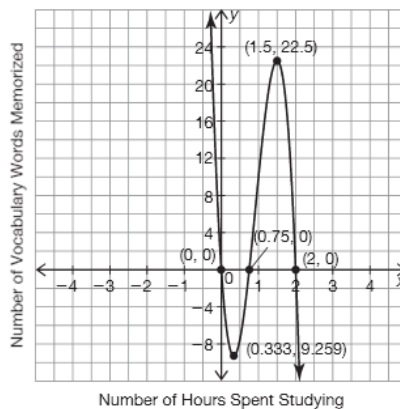
Write a definition for the term in your own words.

1. average rate of change

Problem Set

The graph shows the number of vocabulary words a student is able to memorize based on the amount of time spent studying. Use the graph to answer the questions.

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1. How many vocabulary words does the student know at the start of the study? Where is this information located on the graph?

The student knows 0 vocabulary words at the start of the study. This event is represented by the y-intercept at the origin.

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2. Describe the relative minimum in terms of the problem situation.

3. What is the minimum amount of time the student studies before they begin to remember the vocabulary? Where is this information located on the graph?

4. How long did the student need to study in order to remember 22 vocabulary words? Where is this information located on the graph?

5. The graph has an x -intercept at $(2, 0)$. Describe the activity of the student at this point in terms of the problem situation.

6. Does the graph accurately describe the problem situation? Explain your reasoning.

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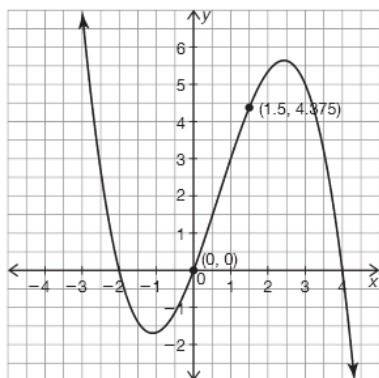
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Determine the average rate of change for the given interval for each polynomial function.

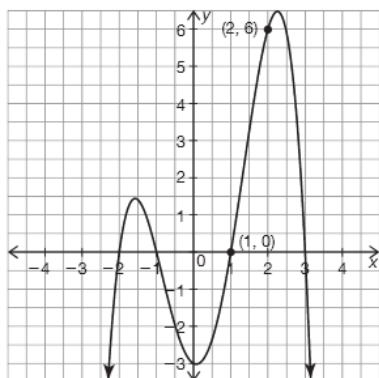
7. (0, 1.5)



$$\begin{aligned} \frac{f(b) - f(a)}{b - a} &= \frac{f(1.5) - f(0)}{1.5 - 0} \\ &= \frac{4.375 - 0}{1.5 - 0} \\ &= \frac{4.375}{1.5} \\ &\approx 2.92 \end{aligned}$$

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8. (1, 2)

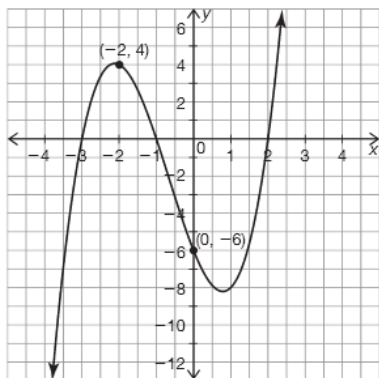


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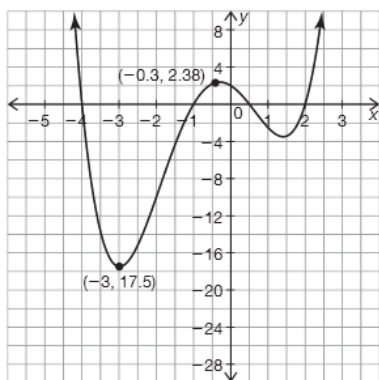
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9. $(-2, 0)$



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10. $(-3, -0.3)$



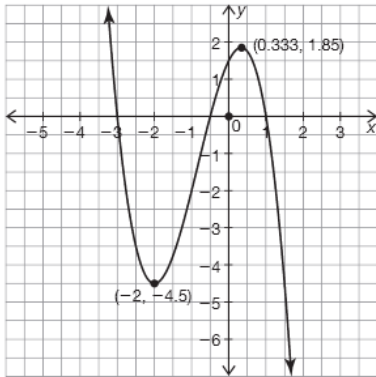
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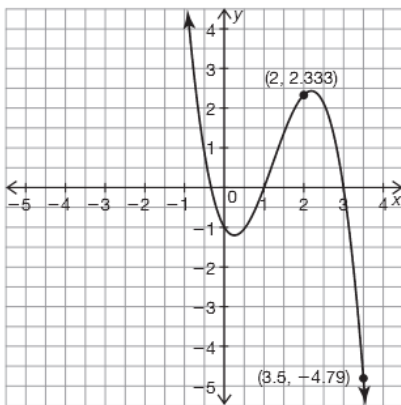
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11. $(-2, 0.333)$



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12. $(2, 3.5)$



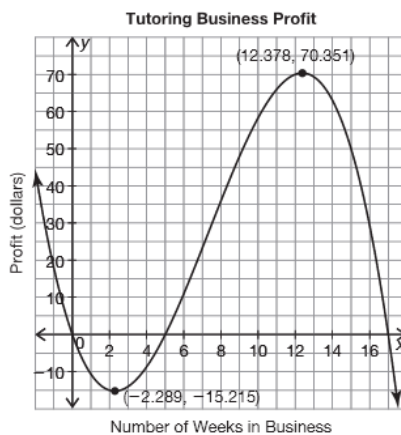
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Solve each equation using the information found in the graph.

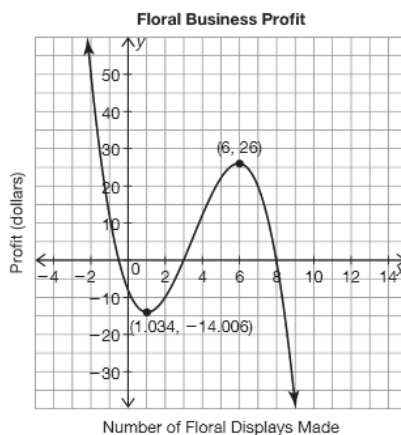
13. The graph models the profit a group of students earns running a tutoring business. After how many weeks did it take the group to earn a profit? Where is this information located on the graph?



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The group earns a profit after 5 weeks in business. The information is located at the x-intercept of (5, 0).

14. The graph models the amount of money a company makes producing floral displays. What is the maximum number of floral displays that the company can create and make a profit? Where is this information located on the graph?



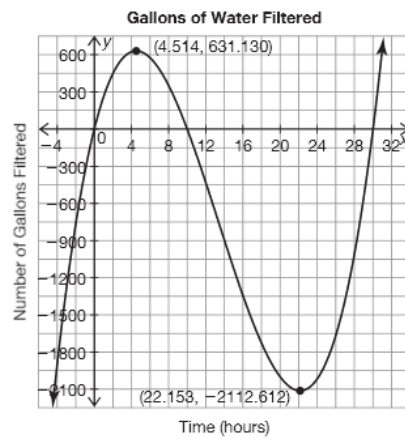
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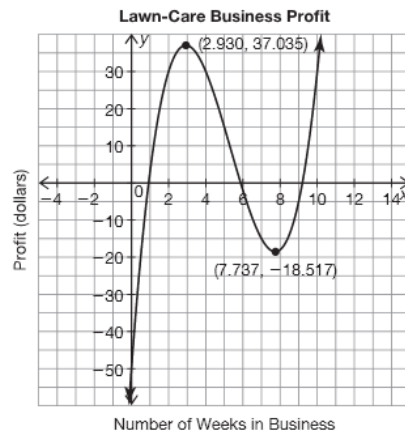
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15. The graph models the number of gallons of water that are filtered at a filtration plant hourly. How many gallons of water has the plant filtered after running for about 4.5 hours? Where is this information located on the graph?



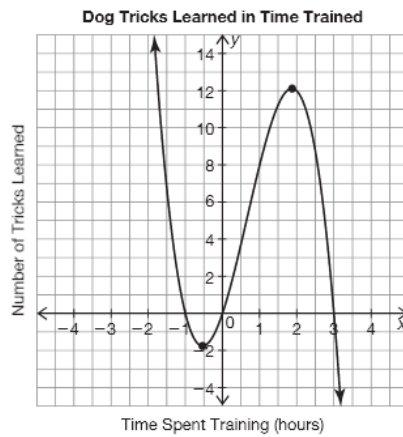
16. The graph models the amount of profit Emilio earns from his own lawn-care business. How much did Emilio initially invest to start his business? Where is this information located on the graph?



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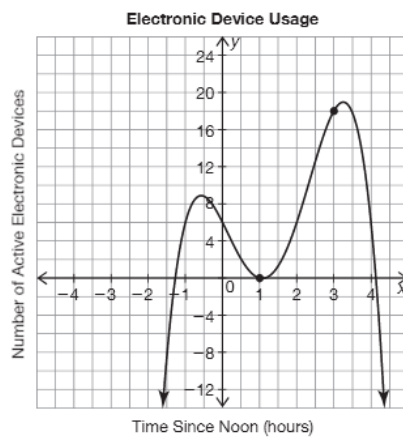
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17. The graph models the number of tricks that a dog can perform based on the number of hours it is trained. Estimate how long it takes the dog to learn 8 tricks. Where is this information located on the graph?



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18. The graph models the number of electronic devices that are being use in a home during the hours of noon and 4:00 pm. Estimate the time when the greatest number of electronic devices are being used. Where is this information located on the graph?



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