

4.1 Average Rate of Change

Find the average rate of change for each function on the specified interval.

1. $f(x) = 3x^2 - x + 5$ on $[-1, 3]$

2. $f(x) = 4x^2 + 12x + 9$ on $[-3, 0]$

3. $f(x) = -x^2 + 4$ on $[-4, -2]$

4. $f(x) = -2x^2 - 6x$ on $[-1, 0]$

Find the average rate of change on the specified interval and interpret its meaning.

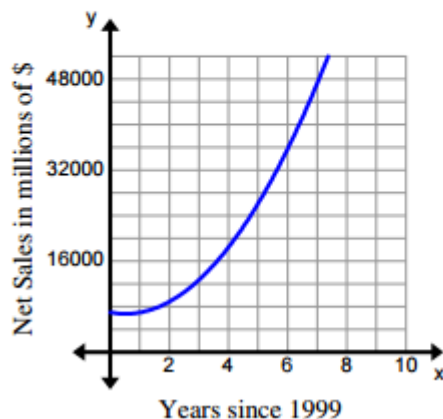
5. Many of the elderly are placed in nursing care facilities. The cost of these has risen significantly since 1960. Use the table below find the average rate of change from 2000 to 2010.

Years since 1960	Nursing Care Cost (billions of \$)
0	1
10	4
20	18
30	53
40	96
50	157

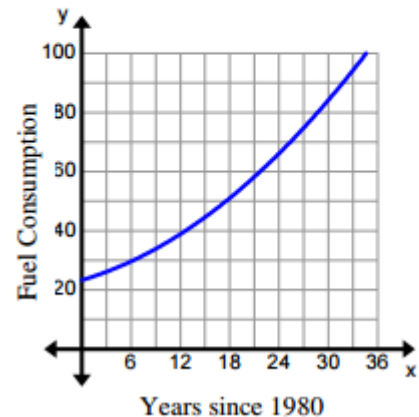
6. The height of an object thrown straight up is shown in the table below. Find the average rate of change from 1 to 2 seconds.

Time (seconds)	Height (feet)
0	140
1	162
2	152
3	110
4	36

7. The net sales of a company are shown in the graph below. Estimate the average rate of change for 2007 to 2009.

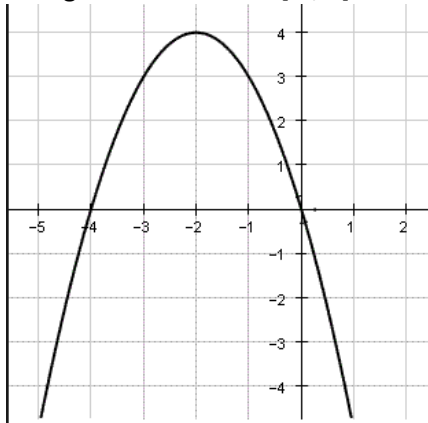


8. The graph below shows fuel consumption in billions of gallons for vans, pickups and SUVs. Estimate the average rate of change for 2005 to 2012.

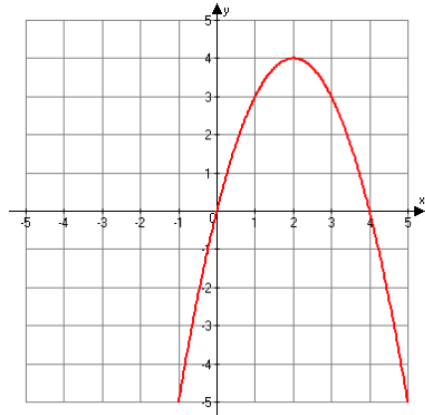


4.1 Average Rate of Change

9. Estimate the average rate of change on the interval $[-2, 0]$.



10. Find the average rate of change from $[1, 4]$.



11. Find the average rate of change from $[4, 12]$
average rate of change

x	0	4	8	12	16
f(x)	22	8	1	8	22

12. Find the

from $[-6, -3]$

x	f(x)
-6	4
-5	7
-4	8
-3	7

12. For $x = -2$, order the functions from least to greatest.

x	f(x)	g(x)	h(x)
-6	4	-2	2
-5	7	1	4
-4	8	4	8
-3	7	7	16

13. Find the minimum value of the function:

$$f(x) = \frac{1}{4}(x-12)^2 + 4$$

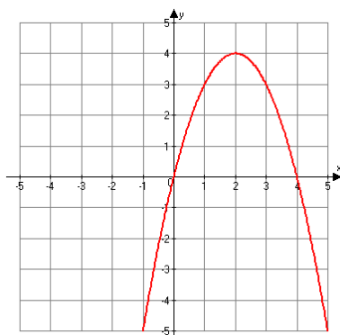
14. Find the minimum value of the function:

x	0	4	8	12	16
f(x)	22	8	1	8	22

15. Find the maximum of the function:

$$f(x) = -0.5x^2 + 8.4x - 12.7$$

16. Find the maximum of the function:



17. The difference between

$$(4x^3 - 3x^2 + 6x - 7) - (?) = 4x^3 - 5x^2 + 10x - 11$$

Find the missing polynomial.