1.3 Rates of Change in Linear and Quadratic Functions

AP Precalculus

1.3 Practice

What is the average rate of change for each function on the given intervals?

1. $y = 7x + 10$ on $-6 \leq x \leq -4$

2. $y = 5x - 3$ on $1 \leq x \leq 7$

3. $y = x^2 + 4x - 2$ on $-3 \leq x \leq 2$

4. $y = 6 - 4x$ on $-2 \leq x \leq 5$

5. $y = 2x^2 + 2x + 1$ on $2 \leq x \leq 5$

6. $y = -3x^2 + 6x + 10$ on $-1 \leq x \leq 1$

What is the rate of change of the average rates of change for each function over consecutive equal-length intervals?

7. $y = 13x - 10$

8. $f(x) = x^2 + 3x + 8$

9. $f(x) = 6x - 2x^2 + 1$

10. $y = 8 - 12x$

11. $y = -7x - 6$

12. $f(x) = 3x^2 - 5x + 2$

The values of a function are given at selected x-values in the table below. The function's concavity does not change. Determine if the function is concave up or concave down. Justify your answer.

13.

x	-8	-6	-4	-2	0
$g(x)$	10	11	14	20	29

14.

x	5	10	15	20	25
$h(x)$	100	75	40	0	-50

15.

x	-20	-19	-18	-17	-16
$f(x)$	54	34	20	15	14

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1.3 Test Prep

16. A function h has a smooth continuous curve. Some of the values of h are given in the table below.

x	2	4	10	15	19
$h(x)$	2	10	16	20	26

Which of the following describes the concavity of h.

(A) Concave up.

(B) Concave down.

(C) Both concave up and concave down at different intervals.

(D) Concavity cannot be determined with the information given.