

Concavity over Intervals

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine where the given function is concave up and where it is concave down.

- 1) $f(x) = x^2 - 4x + 5$ 1) _____
A) Concave up on $(-\infty, 2)$, concave down on $(2, \infty)$
B) Concave up on $(2, \infty)$, concave down on $(-\infty, 2)$
C) Concave down for all x
D) Concave up for all x
- 2) $q(x) = 6x^3 + 2x + 3$ 2) _____
A) Concave up on $(0, \infty)$, concave down on $(-\infty, 0)$
B) Concave up for all x
C) Concave up on $(-\infty, 0)$, concave down on $(0, \infty)$
D) Concave down for all x
- 3) $f(x) = 7x - x^3$ 3) _____
A) Concave up on $(-\infty, 0)$ and $(1, \infty)$, concave down on $(0, 1)$
B) Concave up on $(0, \infty)$, concave down on $(-\infty, 0)$
C) Concave up on $(-\infty, 0)$, concave down on $(0, \infty)$
D) Concave down for all t
- 4) $f(x) = x^3 + 3x^2 - x - 24$ 4) _____
A) Concave down for all x
B) Concave up on $(-1, \infty)$, concave down on $(-\infty, -1)$
C) Concave down on $(-\infty, -1)$ and $(1, \infty)$, concave up on $(-1, 1)$
D) Concave up on $(-\infty, -1)$, concave down on $(-1, \infty)$
- 5) $f(x) = -x^3 + 6x + 2$ 5) _____
A) Concave up on $(-\infty, 2)$, concave down on $(2, \infty)$
B) Concave up on $(-\infty, 0)$, concave down on $(0, \infty)$
C) Concave down on $(-\infty, 2)$, concave up on $(2, \infty)$
D) Concave down on $(-\infty, 0)$, concave up on $(0, \infty)$
- 6) $f(x) = x^3 - 3x^2 + 2x + 15$ 6) _____
A) Concave down on $(-\infty, -1)$, concave up on $(-1, \infty)$
B) Concave up on $(-\infty, -1)$, concave down on $(-1, \infty)$
C) Concave up on $(-\infty, 1)$, concave down on $(1, \infty)$
D) Concave down on $(-\infty, 1)$, concave up on $(1, \infty)$
- 7) $f(x) = 2x^3 + 12x^2 + 18x$ 7) _____
A) Concave up on $(-\infty, -2)$, concave down on $(-2, \infty)$
B) Concave down on $(-\infty, -2)$, concave up on $(-2, \infty)$
C) Concave up on $(-\infty, -3.5)$, concave down on $(-3.5, \infty)$
D) Concave down on $(-\infty, -3.5)$, concave up on $(-3.5, \infty)$

Answer Key

Testname: CONCAVITY OVER INTERVALS

- 1) D
- 2) A
- 3) C
- 4) B
- 5) B
- 6) D
- 7) B