Increasing and Decreasing Functions

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

Find the largest open interval where the function is changing as requested.

1) Increasing $f(x) = x^2 - 2x + 1$ 1) _____

A) $(1, \infty)$ B) $(-\infty, 0)$ C) $(-\infty, 1)$ D) $(0, \infty)$

2) Increasing $y = (x^2 - 9)^2$ 2) _____

A) $(3, \infty)$ B) $(-\infty, 0)$ C) $(-3, 3)$ D) $(-3, 0)$

3) Increasing $f(x) = \dfrac{1}{x^2 + 1}$ 3) _____

A) $(-\infty, 0)$ B) $(-\infty, 1)$ C) $(0, \infty)$ D) $(1, \infty)$

Using the sign of the Derivative find where the function is increasing and where it is decreasing.

4) $g(x) = x^2 - 2x + 1$ 4) _____

A) Increasing on $[0, \infty)$, decreasing on $(-\infty, 0]$
B) Increasing on $[1, \infty)$, decreasing on $(-\infty, 1]$
C) Increasing on $(-\infty, \infty)$
D) Increasing on $(-\infty, 1]$, decreasing on $[1, \infty)$

5) $f(x) = \frac{1}{4}x^2 - \frac{1}{2}x$ 5) _____

A) Increasing on $[-1, 1]$, decreasing on $(-\infty, -1] \cup [1, \infty)$
B) Increasing on $[1, \infty)$, decreasing on $(-\infty, 1]$
C) Increasing on $(-\infty, \infty)$
D) Increasing on $(-\infty, -1]$, decreasing on $[-1, \infty)$

6) $h(t) = \dfrac{1}{t^2 + 1}$ 6) _____

A) Increasing on $(-\infty, 0]$, decreasing on $[0, \infty)$
B) Increasing on $(-\infty, \infty)$
C) Increasing on $(-\infty, 1]$, decreasing on $[1, \infty)$
D) Increasing on $[0, \infty)$, decreasing on $(-\infty, 0]$

7) $h(z) = 108z - z^3$ 7) _____

A) Increasing on $[-36, 36]$, decreasing on $(-\infty, -36] \cup [36, \infty)$
B) Increasing on $(-\infty, -6] \cup [6, \infty)$, decreasing on $[-6, 6]$
C) Increasing on $(-\infty, 6]$, decreasing on $[6, \infty)$
D) Increasing on $[-6, 6]$, decreasing on $(-\infty, -6] \cup [6, \infty)$

8) $h(z) = 12z - z^3$ 8) _____

A) Increasing on $[-2, 2]$, decreasing on $(-\infty, -2] \cup [2, \infty)$
B) Increasing on $(-\infty, -2] \cup [2, \infty)$, decreasing on $[-2, 2]$
C) Increasing on $[-4, 4]$, decreasing on $(-\infty, -4] \cup [4, \infty)$
D) Increasing on $(-\infty, 2]$, decreasing on $[2, \infty)$

Answer Key
Testname: INCREASING AND DECREASING FUNCTIONS

1) A
2) A
3) A
4) B
5) B
6) A
7) D
8) A