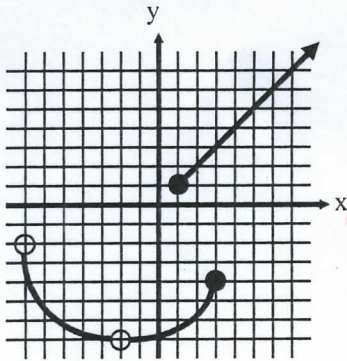


Name: KEY

Read all directions and problems carefully! Show all appropriate work for credit.

1. a) State whether the following graph is a function or a relation. b) Carefully state how this answer was determined. State the c) Domain AND d) Range in Interval Notation.



- a) THE GRAPH IS NOT A FUNCTION \Rightarrow RELATION
 b) THE GRAPH FAILS THE VERTICAL LINE TEST ON $[1, 3]$.
 c) $D: (-7, -2) \cup (-2, \infty)$
 d) $R: (-7, -2) \cup [1, \infty)$ (+6)

2. Given the following functions: $f(x) = -\frac{1}{2}x + 3$, $g(x) = x^2 - 5x$, and $h(x) = 2 - x^3$

- a) Evaluate $f(6)$ and $h(-2)$. $f(6) = -\frac{1}{2}(6) + 3 = -3 + 3 = 0$ (+1)
 b) Find $f\left(\frac{5}{4}\right)$ and $g(-3)$. $h(-2) = 2 - (-2)^3 = 2 - (-8) = 2 + 8 = 10$ (+1)
 c) Find $g(a+2)$. $f\left(\frac{5}{4}\right) = -\frac{1}{2}\left(\frac{5}{4}\right) + 3 = -\frac{5}{8} + \frac{24}{8} = \frac{19}{8}$ (+1)
 $g(-3) = (-3)^2 - 5(-3) = 9 + 15 = 24$ (+1)
 c) $g(a+2) = (a+2)^2 - 5(a+2) = a^2 + 4a + 4 - 5a - 10 = a^2 - a - 6$ (+2)

3. State the domain for each of the following functions in Interval Notation.

- a) $f(x) = -2x^2 + 4x - 11$ $D_f: (-\infty, \infty)$ (+1)
 b) $h(x) = \frac{2}{x}$ $x \neq 0$ $D_h: (-\infty, 0) \cup (0, \infty)$ (+1)
 c) $g(x) = \sqrt{x}$ $x \geq 0$ $D_g: [0, \infty)$ (+1)