grade 100%

## **Practice quiz on Types of Functions**

TOTAL POINTS 6

1. Suppose that  $A=\{1,2,10\}$  and  $B=\{4,8,40\}$ . Which of the following formulae do **not** define a function  $f:A\to B$ ?

1 / 1 point

- f(1) = 4, f(2) = 4, and f(10) = 4.
- $\bigcirc \ f(a) = 4a$ , for each  $a \in A$
- f(1) = 4, f(2) = 40, and f(10) = 8.
- f(1) = 5, f(2) = 8, and f(10) = 40.
  - ✓ Correct

A function f:A o B is a rule which assigns an element  $f(a)\in B$  to each  $a\in A$ . In this case, unfortunately,  $f(1)=5\notin B$ .

2. Suppose that A contains every person in the VBS study (see the second video in the course if you're confused here!). Suppose that  $Y=\{+,-\}$  and  $Z=\{H,S\}$ 

1 / 1 point

Suppose that T:A o Y is the function which gives T(a)=+ if person a tests positive and T(a)=- if they test negative.

Suppose that  $D:A\to Z$  is the function which gives D(a)=H does not actually have VBS and D(a)=S if the person actually has VBS.

Which of the following must be true of person a if we have a false positive?

- $\bigcirc$  T(a) = + and D(a) = H
- $\bigcirc T(a) = + \text{ and } D(a) = S$
- $\bigcirc T(a) = \text{ and } D(a) = S$
- $\bigcirc \ T(a) = \ \mathsf{and} \ D(a) = H$

## ✓ Correct

Recall that a false positive is a positive test result (so T(a)=+) which is misleading because the person actually does not have the disease (D(a)=H)

3. Consider the function  $g:\mathbb{R}\to\mathbb{R}$  defined by  $g(x)=x^2-1$ . Which of the following points are *not* on the graph of g?

1 / 1 point

- $\bigcirc$  (1,0)
- $\bigcirc$  (0,-1)
- $\bigcirc \ (-1,0)$
- $\bigcirc$  (2,-1)

## ✓ Correct

Recall that the graph of g consists of all points (x,y) such that y=g(x). Here  $g(2)=3\neq -1$ , so the point (2,-1) is \emph{not} on the graph of g.

4. Let the point A = (2, 4). Which of the following graphs does *not* contain the point A?

<ul> <li> h is neither a strictly increasing function nor a strictly decreasing function.</li> <li> All statements are correct</li> <li> h is a strictly increasing function</li> <li> h is a strictly decreasing function</li> <li> ✓ correct</li> <li> A function h is called strictly decreasing if whenever a &lt; b, then h(a) &gt; h(b)</li> <li> Since the graph of h is a line with negative slope, this is in fact true!</li> </ul>	The graph of $s(x) = x^2$ The graph of $g(x) = x + 2$ The graph of $f(x) = 2x$ ✓ <b>correct</b> The graph of $h$ consists of all points $(x, y)$ such that $y = h(x)$ . Here $h(2) = 1 \neq 4$ , so the point $(2, 4)$ is $not$ on the graph of $h$ .  5. Suppose that $h(x) = -3x + 4$ . Which of the following statements is true?  • $h$ is neither a strictly increasing function nor a strictly decreasing function.  • $A$ is a strictly increasing function  • $h$ is a strictly decreasing function  • $h$ is a line with negative slope, this is in fact true!  6. Suppose that $f: \mathbb{R} \to \mathbb{R}$ is a strictly increasing function, with $h$ is a line with of the following is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a suppose that $h$ is a possible value for $h$ is a			
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