

Quiz 2 - Math 112, Sections 20-22

1. Eight functions with their domains are given. Circle Y if the function is 1-1 on the specified domain, and N otherwise. \mathbb{R} denotes the real numbers. (Correct answers are underlined)

	function	domain	
(a)	$f(x) = x$	\mathbb{R}	<u>Y</u> N
(b)	$f(x) = x $	\mathbb{R}	Y <u>N</u>
(c)	$f(x) = x^2 + 3x + 9$	\mathbb{R}	Y <u>N</u>
(d)	$f(x) = x^2$	$\{x \in \mathbb{R} \mid x \geq 0\}$	<u>Y</u> N
(e)	$f(x) = x^2$	$\{x \in \mathbb{R} \mid x > 5\}$	<u>Y</u> N
(f)	$f(x) = e^x$	\mathbb{R}	<u>Y</u> N
(g)	$f(x) = \begin{cases} 3 - x & \text{if } x < 0 \\ x^2 - 3 & \text{otherwise} \end{cases}$	\mathbb{R}	Y <u>N</u>
(h)	$f(x) = \frac{1}{x+9}$	$\{x \in \mathbb{R} \mid x \neq -9\}$	<u>Y</u> N

2. Let $f(x) = C \cdot a^x$. If $(0, 4)$ and $(4, 64)$ are on the graph of f , then what is C and a ?

Solution.

Since $(0, 4)$ is on the graph, then we have $4 = Ca^0 = C$, so $C = 4$. Now, since $(4, 64)$ is on the graph, we have $64 = 4 \cdot a^4$, so $a^4 = 16$, meaning $a = 2$.