

Functions, Domain, and Range Review

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1) When is a relation a function? What are some ways to tell if a relation is a function?

2) What is the domain of a function? What is the range of a function? Given a member of the domain, how do you find its value in the range?

If $f(x) = -4x - 7$, find...

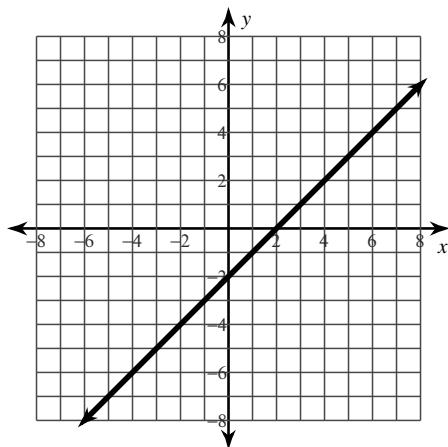
3) a) $f(3)$ b) $f(-7)$

If $f(x) = -3x^2 - 2x + 1$, find...

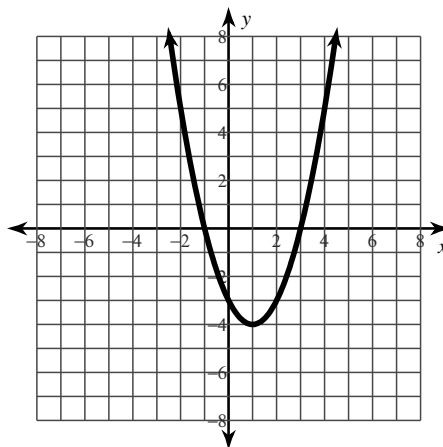
4) a) $f(-4)$ b) $f(0)$

For each question, decide if it is a function. Then find the domain and range in set builder notation.

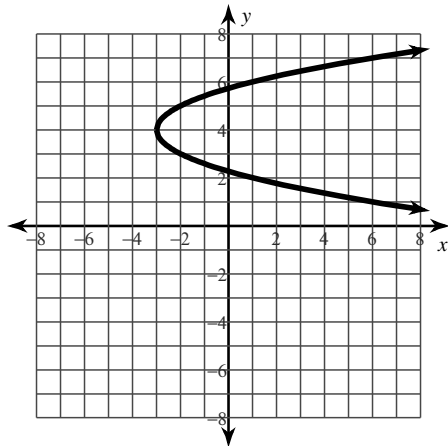
5)



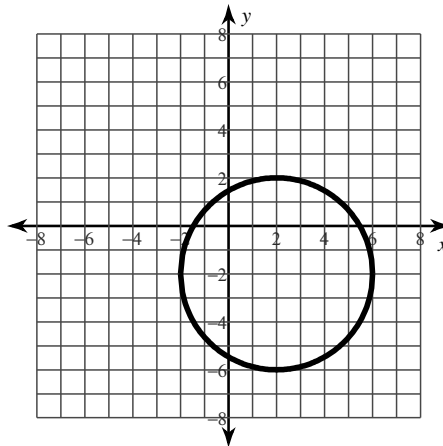
6)



7)



8)



Given the function and a domain, find the range.

9) $f(x) = -7x + 3$, $D = \{-12, -4, 3, 20\}$

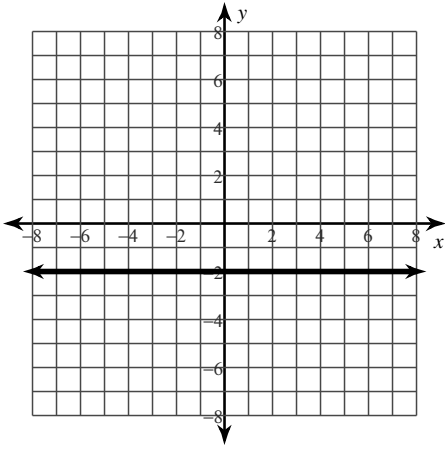
10) $f(x) = 2x^2 - 2x + 5$, $D = \{-2, -1, 0, 1, 2\}$

11) $f(x) = 4x - 1$, $D = \{x|x\}$

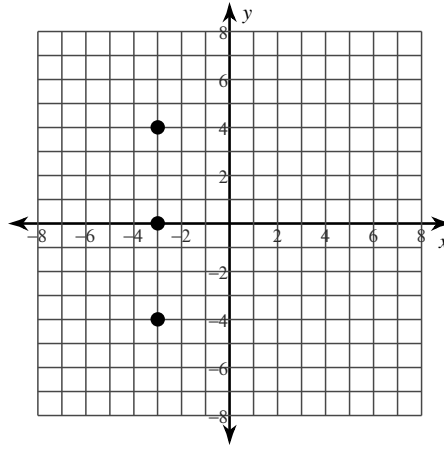
12) $f(x) = 2x^2 - 6x + 11$, $D = \{x|x\}$

For each question, decide if it is a function. Then find the domain and range in set builder notation.

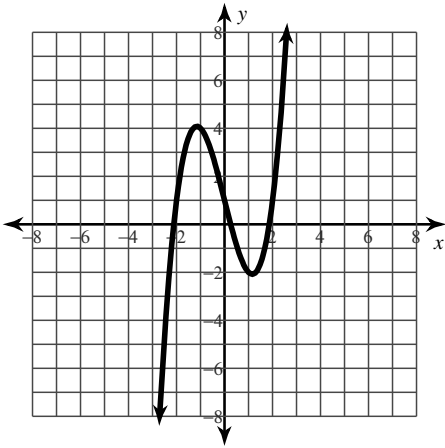
13)



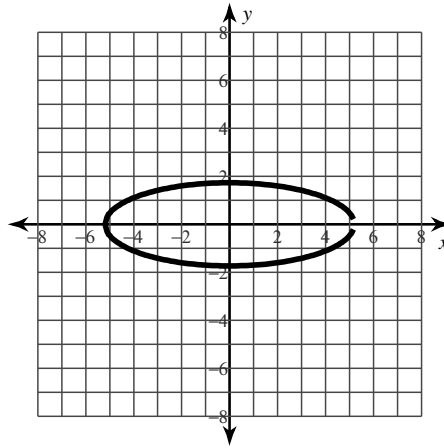
14)



15)



16)



If $f(x) = -3x - 2$, find...

17) a) $f(0)$ b) $f(4)$ c) $f(-1)$

If $f(x) = -11x^2 - 5x + 13$, find...

18) a) $f(1)$ b) $f(-1)$ c) $f(-4)$

Given the function and a domain, find the range.

19) $f(x) = -6x - 1$; $D = \{-2, -1, 0, 5\}$

20) $f(x) = -3x^2 + x + 8$; $D = \{-2, -1, 0, 1\}$

21) $f(x) = 2x^2 + 8x + 3$; $D = \{x|x\}$

22) $f(x) = -4x^2 + 8x + 3$; $D = \{x|x\}$

Answers to Functions, Domain, and Range Review

- 1) Every input has OAOO output; find an x with more than one y / vertical line test
- 2) Set of inputs; set of outputs; set x to the domain value and calculate y
- 3) a) -19 b) 21 4) a) -39 b) 1 5) yes; All real numbers for both: $D=\{x|x\}$, $R=\{y|y\}$
- 6) yes; $D=\{x|x\}$, $R=\{y|y \geq -4\}$ 7) not a function; $D=\{x|x \geq -3\}$, $R=\{y|y\}$
- 8) not a function; $D=\{x|-2 \leq x \leq 6\}$, $R=\{y|-6 \leq y \leq 2\}$
- 9) $R=\{87, 31, -18, -137\}$ 10) $R=\{17, 9, 5\}$ 11) $R=\{y|y\}$
- 12) $R=\{y|y \geq 2\}$ 13) yes; $D=\{x|x\}$, $R=\{y|y=-2\}$ 14) no; $D=\{-3\}$, $R=\{-4, 0, 4\}$
- 15) yes; $D=\{x|x\}$, $R=\{y|y\}$ 16) no; $D=\{x|-5 \leq x < 5\}$, $R=\{y|-2 \leq y \leq 2\}$
- 17) a) -2 b) -14 c) 1 18) a) -3 b) 7 c) -143 19) $R=\{11, 5, -1, -31\}$ 20) $R=\{-6, 4, 8, 6\}$
- 21) $R=\{y|y \geq -5\}$ 22) $R=\{y|y \leq 7\}$