Sept 13

92%

MHF-4U **QUIZ #1** (Knowledge & Understanding) [redacted]

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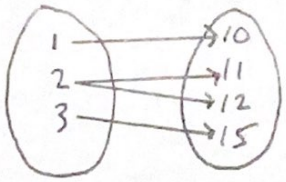
1. For each relation, state the domain, range and whether it is a function or not.

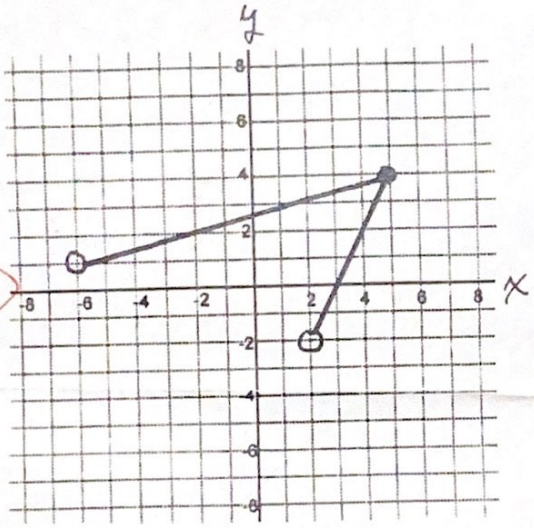
a) (3)



3

Not a function ✓
D = {1, 2, 5} ✓
R = {10, 11, 12, 15} ✓

b) (3)



3

Not a function ✓
D = {x∈R | -6 < x ≤ 5} ✓
R = {y∈R | -2 < y ≤ 4} ✓

c) $f(x) = \frac{5}{x-7}$ (3)

Not a function ✗ ✓
D = {x∈R | x ≠ 7} ✓
R = {y∈R | y ≠ 0} ✓

Doesn't have a y^2

2

d) $x^2 + y^2 = 4$ (3)

Not a function ✓
D = {x∈R | -2 ≤ x ≤ 2} ✓
R = {y∈R | -2 ≤ y ≤ 2} ✓

3

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2. Rewrite using absolute value symbol:

a) $\{ x \in R \mid |x| < -3 \text{ or } x > 3 \}$

(2) $|x| > 3$ ✓

b)

$|x| \leq 2$ ✓

absolute value → only on x

3. Show your work to decide if the function $f(x) = 2x^3 - 4x$ is odd, even or neither.

(3) FACTOR

Start with $f(-x)$ ✓

$f(-x) = 2(-x)^3 - 4(-x)$

$= -2x^3 + 4x$

$= -(2x^3 - 4x)$

If you get $-f(x)$, the function's odd
If you get $f(x)$, the function's even
If you get none of the above, the function is neither

$\therefore f(x) = 2x^3 - 4x$ is odd, because when I put in $f(-x)$, I got $-f(x)$?

4. Which of the nine parent functions, that we studied in section 1.3, is decreasing for $x \in R$.

(1) $f(x) = \left(\frac{1}{2}\right)^x$ ✓

5. Name a parent function (use name or equation) that has the following two characteristics.

a) no interval of increase and asymptote at $x = 0$ and $y = 0$.

(1) $f(x) = \frac{1}{x}$

b) the function is discontinuous

(1) $f(x) = \frac{1}{x}$

c) domain and range are the same and no symmetry

(1) $f(x) = \sqrt{x}$

d) $D = \{ x \in R \}$ and more than one zero

(1) $f(x) = \sin x$

6. Evaluate, show steps.

$|7 - 13| - |22 - 8|$

(2) $= |-6| - |14|$

$= 6 - 14$

$= -8$

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