

A2.A.43: Defining Functions: Determine if a function is one-to-one, onto, or both

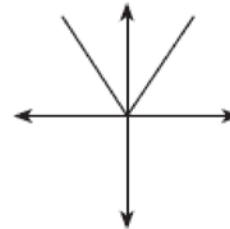
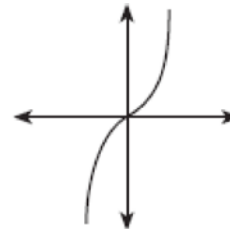
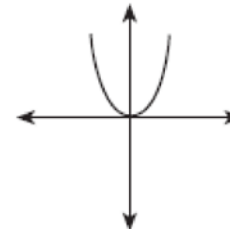
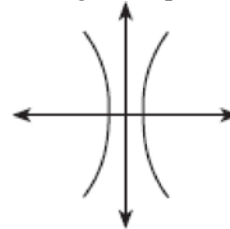
1 Which function is *not* one-to-one?

- 1) $\{(0, 1), (1, 2), (2, 3), (3, 4)\}$
- 2) $\{(0, 0), (1, 1), (2, 2), (3, 3)\}$
- 3) $\{(0, 1), (1, 0), (2, 3), (3, 2)\}$
- 4) $\{(0, 1), (1, 0), (2, 0), (3, 2)\}$

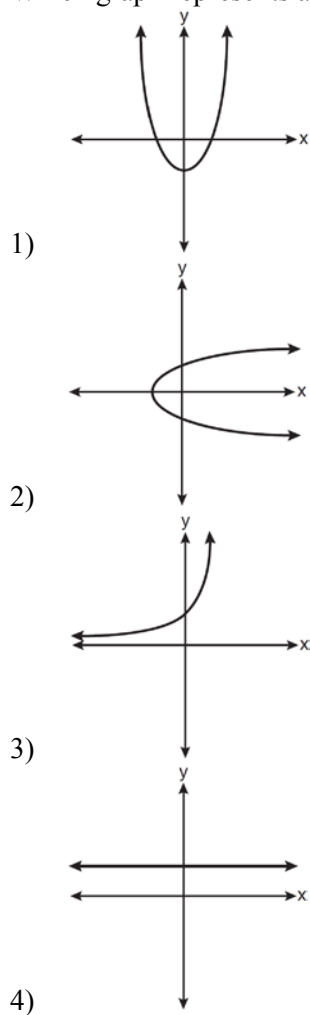
2 Which list of ordered pairs does *not* represent a one-to-one function?

- 1) $(1, -1), (2, 0), (3, 1), (4, 2)$
- 2) $(1, 2), (2, 3), (3, 4), (4, 6)$
- 3) $(1, 3), (2, 4), (3, 3), (4, 1)$
- 4) $(1, 5), (2, 4), (3, 1), (4, 0)$

3 Which diagram represents a one-to-one function?



4 Which graph represents a one-to-one function?



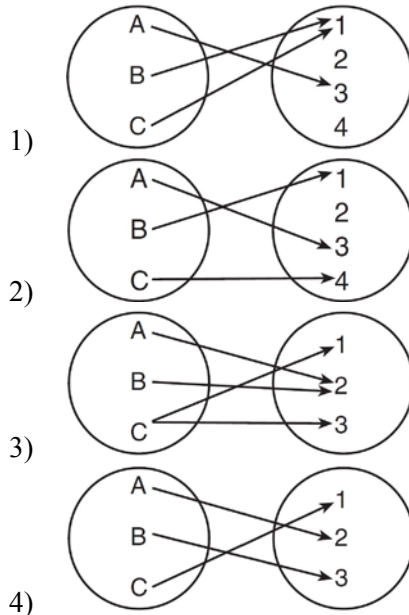
5 Which function is one-to-one?

- 1) $f(x) = |x|$
- 2) $f(x) = 2^x$
- 3) $f(x) = x^2$
- 4) $f(x) = \sin x$

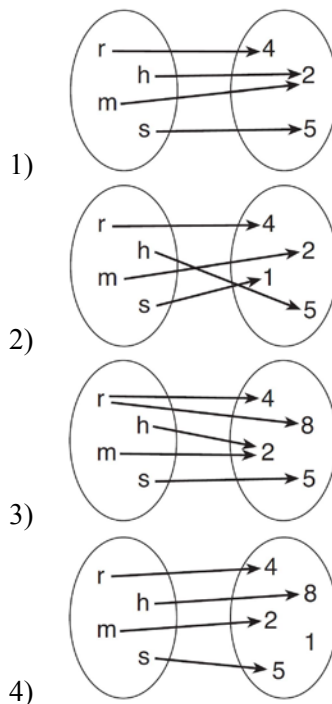
6 Which function is one-to-one?

- 1) $k(x) = x^2 + 2$
- 2) $g(x) = x^3 + 2$
- 3) $f(x) = |x| + 2$
- 4) $j(x) = x^4 + 2$

7 Which diagram represents a relation that is both one-to-one and onto?



8 Which relation is both one-to-one and onto?



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Answer Section

1 ANS: 4 REF: fall0906a2

2 ANS: 3 REF: 061501a2

3 ANS: 3 REF: 060216b

4 ANS: 3

(1) and (4) fail the horizontal line test and are not one-to-one. Not every element of the range corresponds to only one element of the domain. (2) fails the vertical line test and is not a function. Not every element of the domain corresponds to only one element of the range.

REF: 081020a2

5 ANS: 2 REF: 011225a2

6 ANS: 2 REF: 061218a2

7 ANS: 4 REF: 061303a2

8 ANS: 2 REF: 011407a2