

Ryan Erickson

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22C:019 Homework 2

$$\wedge \forall A \rightarrow \leftrightarrow \exists \forall$$

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4a. domain : Set of non-negative integers $\mathbb{Z} - \mathbb{Z}$
range: $\{0,1,2,3,4,5,6,7,8,9\}$

6b. domain: set of positive integers
range: $\{0,1,2,3,4,5,6,7,8,9\}$

14b. not onto

22d. $f(x) = (x^5)+1$ is a bijection

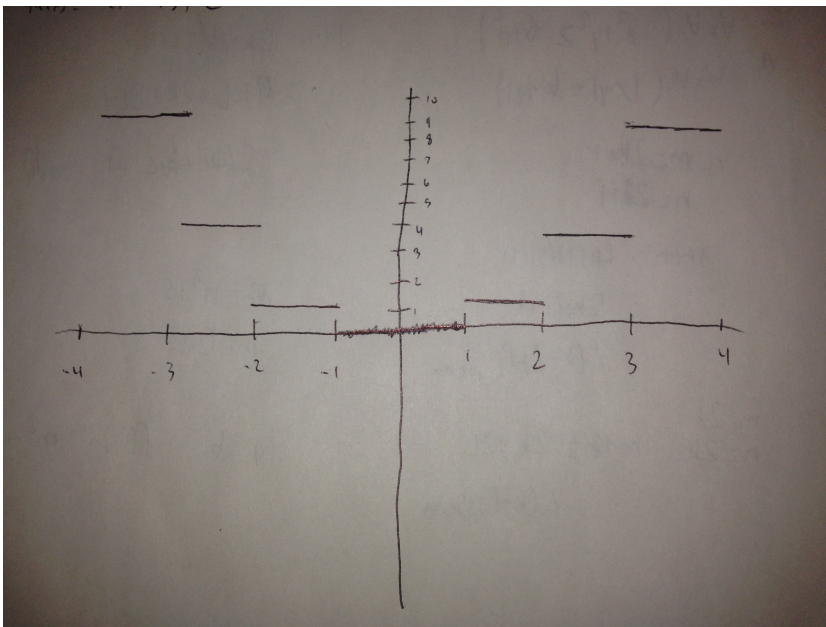
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$$36. f \circ g = (x^2)+4x+5$$

$$g \circ f = (x^2) + 3$$

$$42c. \mathbb{R} - \{-2,2\}$$

68d.



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4d. $a_0 = 2; a_1 = 0; a_2 = 8; a_3 = 0$

8.

1) $a_0 = 1; a_1 = 2 + a_0; a_2 = a_1 + 2; a_3 = a_2 + 2$; Fibonacci sequence

2) $\{2n+1\}$; arithmetic progression

3) $n = 2; a_3 = a_2 + a_1 - 1$; recurrence formula

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16c. $a_n = 4 - ((n(n+1))/2)$

20a. $P_0 = 6.9; P_n = (1.011)P_{(n-1)}$

b. $((1.011)^n)6.9$

26c.

$2^0, 2^1, 2^2, \dots, 2^{(n-1)}$

$2^{(c-1)}$ with 1 on the left and $2^{(c-1)}$ with 0

$a_n = n$

f. $a_n = (2n-1)$

34d. 180

40. 380477799