

S.1 1, 11, 16, 2-Ac

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7d 2, 4, 6, 10, 12, 13

Homework 8

57 12-20 all

5.1 1. a $\{1, 2\}$

b not a function

11. a both

b neither

16. onto

2. a $\{1, 2, 3\}$

b $\{1\}$

4.

yes

b. $f(2) = e^2$

8.

$f(a) = \lfloor a \rfloor$

10. a 3

b 7

c $(x+1)^2 + 2$

d $x^2 + 3$

e $y + 2$

f $(y^2 + 2)^2 + 2$

12. a neither

b onto

14. a onto

b. not one to one

5.2 2. a 1

b 6

c 7

4. a false b true c false

6. a 3 b -2 c 14

d -17 e 22

10. a -3 b -23 c -253 d 6561

d -41

12. a 9 b 27 c 729 d

13. a 4 b 7 c 9 d 10

5.3 12. $\Theta(1)$, $\Theta(\lg(\lg(n)))$, $\Theta(\lg(n^4))$, $\Theta(\lg(n!))$, $\Theta(n + \lg(n))$

$\Theta(-15n)$, $\Theta(\sqrt{n} + 12n)$, $\Theta(5n \lg(n))$, $\Theta(9n^{0.7})$, $\Theta(6n^2 - 3n + 7)$, $\Theta(1.5^n)$, $\Theta(n!)$

13. $f_5 = \Theta(1)$, $f_6 = \Theta(n)$, $f_7 = \Theta(n \lg(n))$

$f_{10} = \Theta(\lg(n))$, $f_2 = \Theta(n^2)$, $f_{11} = \Theta($

$f_9 = \Theta(2^n)$

14. $f(n) = 12$, $\Theta(1)$

15. 1. $x = 3$, $y = 50$

2. $x = 5$, $y = 25$

3. $x = 7$, $y = 12.5$

4. $x = 9$, $y = 6.25$

$f(n) = 8$, $\Theta(1)$

16. $f(n) = n$, $\Theta(n)$

17. $f(n) = 2(n-1)$, $\Theta(n)$

18. $f(n) = \lg(n)$, $\Theta(\lg(n))$

19. $f(n) = \frac{n(n+1)}{2}$, $\Theta(n^2)$

20. $f(n) = \frac{n(n+1)}{2}$, $\Theta(n^2)$