1.3 4, 10, 19, 20, 22, 22a-b, 32, 34b

1.4 4, 6 12 16, 40a-b

Brandon Buchanan
Math for Comp Sci
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others 1. find reg. expression for $\{a, b\}$, where $ab = \varepsilon$ & $bb = \varepsilon$

2 $\{a\ b\}$, where $aa = \emptyset$

her answers 1. $(ab \vee bb)$

2 ab^*

1.3 4. $\{x \mid$ x equals each letter of the alphabet and each letter is shown N times together, with 'N = number place of that letter in the alphabet $\}$

10 $h_1 = 1$

$h_2 = \frac{(a-1)(a+1)}{a-1} = a+1$

$h_3 = \frac{a^3-1}{a-1} = \frac{(a-1)(a^2+a+1)}{a-1} = a^2+a+1$

$h_4 = \frac{a^4-1}{a-1} = \frac{(a^2+1)(a^2-1)}{a-1} = (a^2+1)(a+1)$

14. $f_1 = 4$ $f_3 = 24$

$f_2 = 8$ $f_4 = 96$

20. $f_n = \frac{1}{2^{n-1}}$ $f_1 = 1$

22. $f_1 = 2$, $f_2 = 5$, $f_n = f_{n-1} + f_{n-2}$

27a true or 1

b false or 0

32. a no b no c. yes

34 b $\{pr, pqqr, pqqqqr, pqqqqqqr, \ldots\}$

1.4. 4. $48 = 4(12) + 0$

6. $GCD = 20$, $d = (2)60 + (-1)100$

12. 175 = 25 · 7 = 5 · 5 · 7

245 = 5 · 49 = 5 · 7 · 7

$5 \times 5 \times 7 \times 7 = 1225$

16. a $f(1545) = 5$

b $f(752) + f(793) = 5$

c $f(638) = 1$

d $f(319) = 4 \cdot 2 = 8$

40. a i $(41)_7$

ii $(133)_7$

iii $(425)_7$

iv $(2064)_7$

b i 51

ii 92

iii 238

iv 635