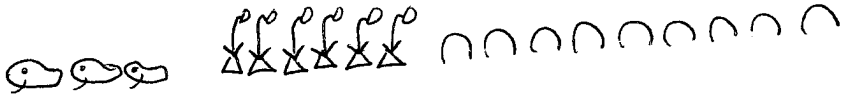
Math 100:11 Assignment 4 Solutions

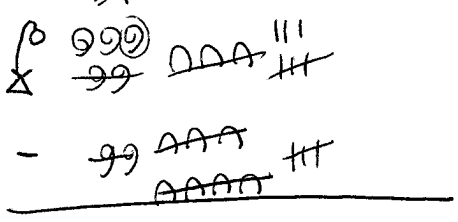
4.1 8, 22, 34, 48 any 2
4.3 2, 8, 20, 22, 34, 40 any 3
4.5 24, 32 any 1

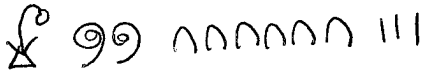
each worth 2 points

4.1

8 306,090 

22. 2416 二千四百一十六

34 



48. largest number expressible base 5, 10 distinct symbols

$$(4\times5^9)+(4\times5^8)+(4\times5^7)+(4\times5^6)+(4\times5^5)+(4\times5^4)+(4\times5^3)$$
$$+(4\times5^2)+(4\times5^1)+(4\times5^0)$$
$$= 5^{10}-1 = 9765624$$

4.3

2. First 20 counting numbers base 8:

1, 2, 3, 4, 5, 6, 7, 10, 11, 12
13, 14, 15, 16, 17, 20, 21, 22, 23, 24

8. 10111_2

just before 10110_2

just after 11000_2

20. $34432_5 = 3\times5^4 + 4\times5^3 + 4\times5^2 + 3\times5^1 + 2\times5^0$

$= (3\times625) + (4\times125) + (4\times25) + (3\times5) + (2\times1)$

$= 1875 + 500 + 100 + 15 + 2$

$= 2492$

40. 11028 to base 4

powers of 4: $4^0=1, 4^1=4, 4^2=16, 4^3=64, 4^4=256, 4^5=1024$

$4^6=4096$, ~~$4^7=16384$~~

$11028 = 2(4096) + 2836$

$2836 = 2(1024) + 788$

$788 = 3(256) + 20$

$20 = 0(64) + 20$

$20 = 1(16) + 4$

$4 = 1(4) + 0$

$0 = 0(1)$

oops wrong order of questions

So 2230110_4

22. $10110111_2 = 2^8 + 2^6 + 2^5 + 2^3 + 2^2 + 2^1 = 366$

34. 2730 to base 16

powers of 16: $16^0=1, 16^1=16, 16^2=256$, ~~$16^3=4096$~~

$2730 = 10(256) + 170$

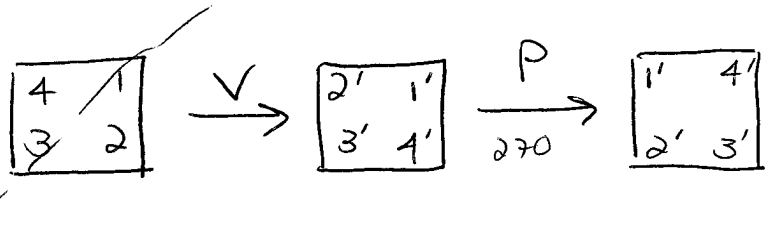
$170 = 10(16) + 10$

$10 = 10(1)$

So AAA_{16}

4.5

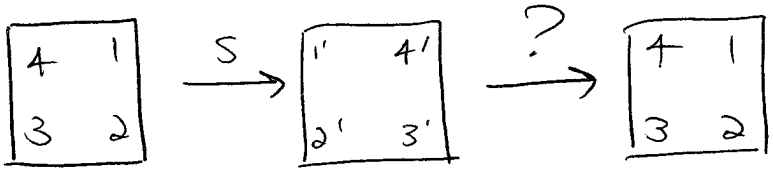
24. VP



So VP = S

vertical reflection

32 Inverse of S



just do S again

So inverse of S is S.