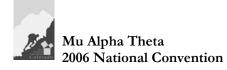


1.	D	16.	В
2.	Е	17.	С
3.	С	18.	С
4.	В	19.	В
5.	А	20.	А
6.	А	21.	А
7.	С	22.	Е
8.	С	23.	В
9.	В	24.	D
10.	D	25.	В
11.	А	26.	С
12.	С	27.	В
13.	D	28.	А
14.	А	29.	В
15.	С	30.	D



- 1. D: 4+5+6+7=22
- 2. E. Since sin(180)=0, the product is 0.
- 3. C.  $a_1 + 9(4) = 12; a_1 = -24$ .

4. B. Using the change of base rule: 
$$\frac{\log 3 \log 4}{\log 2 \log 3}$$
 ...  $\frac{\log 8}{\log 7}$  which reduces tolog8/log2 which is 3.

5. A.

- 6. A. The first four terms are i + -1 + -i + 1 and that sum is 0. Every next group of 4 terms also adds to 0.
- 7. C. The absolute value of all terms is 1. So this is 1+1+... added 20 times, which is 20.
- 8. C. The common ratio is 1/2, so T/U is the reciprocal of that.
- 9. B.  $a_1 + 2d = 1$ ;  $a_1 + 9d = 20$  solves to d=19/7.
- 10. D. The first term is 0, and the next term is the first term times 4, which is 0, and on and on. The sum of 400 zeros is 0.
- 11. A. This is the Fibonacci sequence. 1, 1, 2, 3, 5, 8, 13, ... and the difference between the sixth and fifth terms is 3, which equals the fourth term.
- 12. C. The terms are  $0.90a_2, a_2, \dots$  and  $a_2 \div a_1 = 1 \div 0.9 = \frac{10}{9}$ , so the common ratio is 10/9. Therefore

the third term is 10/9 times the second term and  $10a_2/9 = 1000$  solves to the second term is 900. So the first term is 9/10 of that. Which is 810.

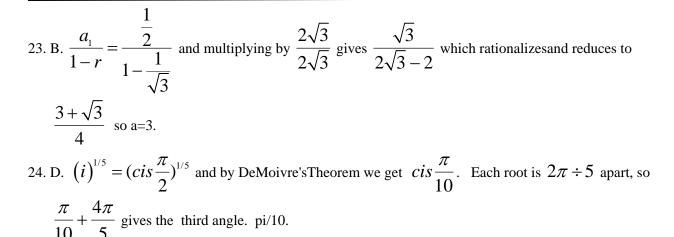
13. D. Each increase is 15%, making the common ratio 1.15.

- 14. A. Let the sequence be  $2, 2r, 2r^2, 2r^3$  and the last is -54. Solve this to get r= -3. Themeans are then -6 and 18, making the answer -6.
- 15. C. The difference between the second and fourth term is 14, so the common difference is 7. g=20+7=27.
- 16. B.  $\frac{1}{4} \frac{1}{2} + 1 + 2 + 4 = 7 0.25$
- 17. C. The sum of the roots is -B/A, 8, so a+b=8 and a-1=b-a, and this solves to a=3.So the terms are 1, 3, 5 and the product of the roots (k) is 15.
- 18. C. If the third and first term divide to 9 then the common ratio is 3. So  $a_1 + 3a_1 = \frac{4}{3}$  and so  $a_1 = \frac{1}{3}$ .

That makes the terms 1/3, 1, 3, 9.

- 19. B. The product is requested: 2(3)(4)(5).
- 20. A. If  $\sqrt{a + \sqrt{a + \dots}} = p$ ;  $\sqrt{a + p} = p$  and  $p^2 p a = 0$ . The roots are p and p-1 where p is positive. The product of the roots is p(p-1), which is a.
- 21. A. Dividing by 1/2 is the same as multiplying by 2. So  $2(2^1 + 2^2 + ... + 2^8)$  equals  $2^2 + 2^3 + ... + 2^9$ , which is choice A.
- 22. E. At x=11, we get 10!.

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- 25. B. 2 times the sum (15) equals  $x + x^2$ . So  $x^2 + x 30 = 0$  and the roots are 5 and -6. The positive value is 5.
- 26. C. The original square gained 2 on each side, and the area of that square was 3 squared. Each four terms will gain two on each side, and the area is that value squared. So the areathrough the 9<sup>th</sup> term is 25, the area through 13<sup>th</sup> term is 49 and the 17<sup>th</sup> term gives area 81.
- 27. B. 64 has a cube root (n=2) and a sixth root(n=5) for n greater than 1. There are twovalues for n>1 that are integral.
- 28. A. The sum of the values of C(100,n) forn equals 0 to 100 gives  $2^{100}$ , and if we omitthe value of C(100,0) and C(100,100) then we subtract 2.
- 29. B. Let AB=k.  $\frac{1}{2}(AB)h:\frac{1}{2}(AC)h$  for the same height h, gives AB:AC equal to 5:1. So BC=4k. Likewise, CD=20k, and DE=100k.
- 30. D. The terms are -1, 2, -4, 8. This gives the expression  $\sum_{n=1}^{4} (-1)^n (2)^{n-1}$ .