**Math 12 Final Exam Pre Test/Exam Outline**  Name ☺ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**NO CALC**

1. Determine the range, maximum and minimum values of the following graph



2. Simplify the following sinx+cosxcotx

3. Determine the exact value 

4. Solve 

5. Sketch a graph of the graph of y = csc2x

6. Determine an expression equivalent to 

7. Determine the period of the graph y=5sin3x

8. Solve cosx=sinx, where .

9. What is the asymptote for the graph 

10. Determine an equivalent expression to 2logx - logy – 5logz

11. Determine an equivalent expression to 

12. In a Petri dish bacteria triples every 3 hours. If there were 300 bacteria to start and there are currently 5000 bacteria, determine the equation that would be used to find how long the bacteria have been in the dish.

13. Solve: 

14. If log a = 2.5 and log b = 1.5 find 

15. Simplify 

16. If the graph of  is reflected over the y-axis and then translated 5 units left, what is the new equation?

**Calculators allowed**

17. The graph of  is reflected over the x-axis and vertically compressed by a factor of ½. Determine the equation of the new graph.

18. Describe what happens to the graph of  if it becomes .

19. Find the inverse of f(x) if .

20. If the point (-3,9) is on the graph of y=f(x). Determine the coordinates of the point after the transformation given 

21. . If the point (2,-4) is on the graph of y=f(x). Determine the coordinates of the point after the transformation given 

22. The terminal arm of angle A in standard position intersects the unit circle at the point (b,c). Determine an expression that would represent 5cscA.

23. In a circle, an arc length 10.5 cm contains a central angle of . Determine the radius of the circle.

24. Determine the restriction(s) for the expression 

25. Determine the equation of the polynomial in factored form if the zeros are

-2,-1,2 and the y-intercept is -5.

26. Determine the reminder when  is divided by x-1.

27. If a polynomial P(x) is divided by x-3, what is the remainder?

28. When  is divided by x+1, the reminder is 7. Find the value of *k*.

29. Determine the domain of the following function: 

30. What are the vertical and horizontal asymptotes of the following rational function: ?

31. How do I know if a rational equation does not have a horizontal asymptote?

32. What is the decimal representation of 

33. Find  if  and 

34. I invested $5000 in a bond at a rate of 4.5% per annum compounded monthly. What will the value of the bond be worth at the end of 6 years?

35. Determine all of the different arrangements of all of the letters of the word EQUILATERAL.

36. Determine the number of pathways of a small town if there are 6 blocks travelling east from the north-west corner of the city and 7 blocks south to the south-east corner of the city.

37. In a standard deck of 52 cards, how many poker hands are there with exactly 2 aces and one jack?

38. In the expansion of  what is the coefficient of the constant term?

39. A book store has 5 new fiction books, 3 new poetry books, 7 new non-fiction books and 3 new cook books. The owner wants to display all of the books in a row in the store window, but wants to keep all of the fiction, non-fiction, poetry and cook books together. How many different arrangements are possible?

40. There are 7 brunettes, 5 blondes, 2 red-heads and 5 people with black hair trying out for 4 spots in a hair commercial. How many different combinations are possible if at most 2 blondes are chosen for the parts?

**8 written questions:**

1. Trig Equation
2. Trig proof
3. Polynomial factor and solve
4. Transformation graph question
5. Transformation graph question
6. Log equation
7. Ferris wheel type question
8. Binomial expansion