**MATH 162 Practice QUIZ IX**

1. Integrate each of the following functions:

















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1. State *Euler’s identity*. Use Euler’s identity to express cos (4x) in terms of cos x and sin x.
2. Solve the equation z4 = -16.
3. Express each of the following in the form a + bi
4. i-1
5. (-1)i
6. (1 + i)90
7. 3ei/6
8. 
9. 

6. Using substitution (or any other method that you prefer), evaluate each of the following integrals:















7. Express each of the following in *polar form*: (a) 1 + i, (b) 3 – 3i,

(c) , (d) 5 + 12i

8. Solve the equation *z5 = 1*. (You should have fiv e solutions.)

1. Solve the equation z4 = -1.
2. Solve the equation z3 = i.

11. Using Euler’s formula, express sin 5x in terms of sin x and cos x. (*Hint:* (a + b)5 = a5 + 5a4b + 10a3b2 + 10a2b3 + 5ab4 + b5)

12. Using an appropriate trig substitution, evaluate OR reduce each of the following to a simpler form:

1. 
2. 
3. 
4. 
5. 
6. 
7. 

13. Consider the region bounded by the graphs of y = (x arctan x)1/2 and y = 0, for 0 ≤ x ≤ 1. Find the volume of the solid formed by rotating this region about the x-axis.

*I'm very good at integral and differential calculus,*

*I know the scientific names of beings animalculous;*

*In short, in matters vegetable, animal, and mineral,*

*I am the very model of a modern Major-General.*

*About binomial theorems I'm teeming with a lot of news,*

*With many cheerful facts about the square on the hypotenuse.*

 - W. S. Gilbert, **The Pirates of Penzance**(1879)