# MATH 162 Solutions: QUIZ VIII

1. [15 pts] Give the correct *form* (for example: A/(x+2) + B/(x –13) for the partial fraction decomposition of each of the following rational functions. *Do not solve for A, B, C, …*
2. 

*Since the roots of the denominator are unique:*



1. 

*Note that this rational function is proper.*



1. 

*Note that the denominator can be factored further.*



1. [50 pts] Answer any five of the following problems. You may answer all six to earn extra credit. Integrate the following functions:



*Solution:*



 (revised)

*Solution:*





*Solution:*





*Solution:*



*Solving for A and B, we have A = 3, B = -4.*

*Hence:*





*Solution:*



*Solving for A, B and C, we have A = 1, B = -1, C = 0*



*Solution:*

*Let u = ex; then du = ex dx. So*



*Using partial fraction decomposition:*



1. [10 pts] (a) Convert  from Cartesian coordinates, (x, y), to polar

coordinates, (r, ). Give an exact answer.

 and 

(b) Convert (8, 22013) from polar coordinates, (r, ), to Cartesian coordinates, (x, y).

*Solution: Note that 22013is a multiple of 2. Now x = 8 cos(22013cos 0 = 8 and y = 8 sin(22013= 8 sin(0) = 0. Thus the Cartesian coordinates of this point are:* ***(8, 0)***

1. [10 pts] Express the polar equation r(cos  + sin ) = 8 as an equivalent Cartesian equation.

*Solution: Since x = r cos  and y = r sin , we have: x + y = 8.*

5. [10 pts] Find the *area* bounded by the spiral r = e for 0 ≤  ≤ .



6 . [10 pts] Find the length of the spiral r =  2 , 0 ≤  ≤ 51/2.

