

NAME: _____

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Worksheet week 8 - MAC 2312, Spring 2014

1. Write out the form of the partial fraction decomposition for $\frac{x^2+x+1}{(x^2+1)(x+1)^2}$. You do not have to determine the numerical value of the coefficients.

2. Compute

(a) $\int \frac{1}{x^4 + x^2} dx$

(b) $\int \frac{1}{(x+a)(x+b)} dx$

Note: For both integrals, the partial fraction method is the most natural. However, the first integral can also be done nicely with a trigonometric substitution.

3. You will be shown the graph of the parametric curve $x = 3t - t^3$, $y = 3t^2$.

(a) Find the length of the loop described by the curve.

(b) Write an integral that will compute the area inside of the loop.