Name _____ **DUE DATE:** _____

Directions:
- *Read each problem carefully and use your knowledge of mathematics to determine your answer.*
- *In order to receive FULL CREDIT you must either SHOW ALL WORK or EXPLAIN how you got your answer!! PLEASE NOTE: A multiple choice answer alone without any work will only receive half credit.*

Question	Your Work/Explanation
1) Eliminate the parameter: $$x = -5\cos t, \qquad y = 5\sin t$$	
2) Find the vertical asymptotes for the graph of the function $$f(x) = \frac{x^3 - 3x^2 + x - 3}{x^4 - 1}$$	
3) Simplify by rationalizing the denominator: $\dfrac{15}{5 + 2\sqrt{5}}$	

4) Simplify: $(3x^{1/4}y^{-2})(-4x^{1/3}y^{1/5})$

5) Eliminate the parameter and find a corresponding rectangular equation: $x = 3t + 1$ and $y = 2t$.

(a) $y = \frac{2}{3}x - \frac{2}{3}$ (b) $y = \frac{2}{3}x - 1$

(c) $y = \frac{1}{6}x + \frac{1}{6}$ (d) $y = \frac{2}{3}x - 2$

6) Convert from rectangular to polar coordinates: $(5\sqrt{2}, -5\sqrt{2})$

7) Find the sum: $\sum_{k=2}^{6}(-1)^k(2k)$

(a) 40   (b) -4 (c) 6   (d) 8

8) Divide: $\dfrac{x+y}{x^3-x^2} \div \dfrac{x^2+y^2}{x^2-x}$

(a) $\dfrac{1}{x(x+y)}$ (b) $\dfrac{x+y}{x(x^2+y^2)}$

(c) $\dfrac{x(x^2+y^2)}{x+y}$ (d) $-x$

9) Evaluate: $\ln e^{1-x}$

(a) e^{1-x} (b) e

(c) $1-x$ (d) $\ln(1-x)$

10) Solve: $3^{2x-1} = 15$

11) Simplify: $\dfrac{\dfrac{1}{x} - \dfrac{1}{x+1}}{\dfrac{1}{x^2 + 2x + 1}}$

12) Find all solutions in the interval $[0, 2\pi)$:

$$2\sin^3 x + \sin^2 x = 0$$