Math 222 In class assignment 5-Practice Exam Problems

Name:_____

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Directions: Work in groups to complete the following problems.

1. Let C be the curve given parametrically by $x(t) = 2t^3$ and $y(t) = 3t^2$ for $t \in [-1, 2]$. Calculate the derivatives- express as a function of time.
   (a) $\frac{dy}{dx}$
   (b) $\frac{d^2y}{dx^2}$
   (c) Find the x and y coordinates at the following times: $t = -1, 0, 1, 2$
   (d) Sketch the curve.
   (e) Find the area of the region bounded between C, the x-axis, and $x = -1$ and $x = 2$
   (f) Calculate the arclength of C.
2. Evaluate
   (a) $\int (x+1)\sin(x^2+2x+2)dx$
   (b) $\int_0^1 xe^x dx$
   (c) $\int x \arcsin(x)dx$
   (d) $\int \tan^8(x)\sec^4(x)dx$
   (e) $\int \cos^4(x)dx$
   (f) $\int \frac{x^3}{x^2+2x+2}dx$
   (g) $\int \frac{\sin(\theta)-\cos(\theta)}{\sin(\theta)\cos(\theta)}d\theta$