MA 126-103 — Summer 2017 — Dr. Clontz

Name:	
J#:	
Date: **2017 July 06**	

Exercise Type (Cost):

In-Class (1AP)

Standard: This student is able to... **C04: IntParts.** Use integration by parts. Extra2 ⋆ reattempt due on:	Mark:

Find $\int 2x^5 \ln(x)\, dx$.

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Exercise Type (Cost):

In-Class (1AP)

Standard: This student is able to...	Mark:
C10: Polar. Convert and sketch polar and Cartesian coordinates and equations.	
3/4 ⋆ reattempt due on:	

Find a Cartesian equation for the circle defined by the polar equation $r = 6\sin\theta$. (Hint: Multiply both sides by r, convert to x and y, move all terms to the same side, add 9 to both sides of the equation, and then factor the y terms.) Then sketch the circle.

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Exercise Type (Cost):

In-Class (1AP)

Standard: This student is able to...	Mark:
S09: PolarAppl. Use polar coordinates to express an arclength or area as a definite integral.	
2/4 ⋆ reattempt due on:	

The arclength of the curve defined by the polar equation $r = r(\theta)$ where $\alpha \leq \theta \leq \beta$ is given by $\int_\alpha^\beta \sqrt{(r(\theta))^2 + (\frac{dr}{d\theta})^2}\, d\theta$. Give a definite integral equal to the circumference of the cardioid $r = 3 - 3\sin\theta$.

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Exercise Type (Cost):

In-Class (1AP)

Standard: This student is able to...	Mark:
S10: SeqForm. Define and use explicit and recursive formulas for sequences.	
1/3 ⋆ reattempt due on:	

Complete the following proof by induction that the sequence $\langle 3n^2+1\rangle_{n=1}^{\infty}$ may be defined recursively by $a_1 = 4$ and $a_{n+1} = a_n + 6n + 3$.
We first verify that the explicit formula $a_n = 3n^2 + 1$ satisfies the base case $a_1 = 4$:

Now, assuming that $a_n = 3n^2 + 1$ holds for n, we may use the recursive formula $a_{n+1} = a_n + 6n + 3$ to show that $a_{n+1} = 3(n+1)^2 + 1$: