

## Merit Worksheet #3

Math 231 AD1

**Warm-up Problems:** Quick questions to refresh your memory before harder questions.

1. What are the half-angle formulas?

$$\sin^2(x) = \qquad \qquad \qquad \cos^2(x) =$$

2. How about the double-angle formulas? (there are multiple answers for the second one)

$$\sin(2x) = \qquad \qquad \qquad \cos(2x) =$$

**Integration by Parts (IBP) Review:**

3. Integrate  $\int x^2 \sin(x) dx$

**Trig Integral Practice:**

4. For each of the following integrals, state the substitution you should use and what trig identity you should use. You should be able to explain **WHY** you are choosing a particular substitution to your classmates.

Integral	Substitution (if any)	Identity (if any)
$\int \sin^2(x) \cos^3(x) dx$		
$\int \sin^4(x) \cos^2(x) dx$		
$\int \sin^3(x) dx$		
$\int \sec(x) \tan^3(x) dx$		
$\int \sec^4(x) \tan^2(x) dx$		
$\int \sec(x) dx$		

5. Work through several of these integrals on the chalk board. Try to do an integral that other groups are not doing. At the end of class, you can take pictures of the other groups' solutions.