SECTION 3.2: TRIGONOMETRIC INTEGRALS (DAY 2)

1. Recall the Pythagorean Identities:

2. Explain why the strategy we used earlier (say on $\displaystyle\int_0^{\pi} \cos^4\left(\frac{x}{\pi}\right)\sin^3\left(\frac{x}{\pi}\right)\,dx$) will *not* work on the integral below:

$$\int \cos^2(x)\sin^2(x)\,dx$$

3. Two Power-Reducing trigonometric identities:

4. Evaluate the integrals below:

   (a) $\displaystyle\int \cos^2(x)\sin^2(x)\,dx$

   (b) $\displaystyle\int_0^{\pi/20} \cos^2(5x)\,dx$

5. Which of the two integrals below can you immediately evaluate? Evaluate that one and explain why the other one is problematic.

   (a) $\int \sin(5x)\cos(5x)\,dx$

   (b) $\int \sin(5x)\cos(4x)\,dx$

6. Three Sum of Angles trigonometric identities:

7. Make up an integral that one of the last two identities would help solve it. Then solve your integral.