# Quiz 3

The following trigonometric identities are provided:

$$\cos(2x) = \cos^2(x) - \sin^2(x) \qquad \sin^2(x) = \tfrac{1}{2}[1 - \cos(2x)]$$
$$\cos^2(x) = \tfrac{1}{2}[1 + \cos(2x)] \qquad \sin(2x) = 2\sin(x)\cos(x)$$

Show *all* your work. Reasonable supporting work must be shown to earn credit. There are *two* sides to this quiz.

1. [3] (WebHW7 #1) Consider the integral $\int xe^{116x}\,dx$, Identify $u$ and $dv$ for finding the integral using integration by parts. Do not evaluate the integral.

2. [3] (§8.3 #74) Set up the definite integral(s) to compute the area trapped between $y = \sin(x)$, $y = \sin^3(x)$, $x = \frac{-\pi}{2}$, and $x = \frac{\pi}{2}$. Do not compute the answer.

3. [4] (IP Activity #2, Trig Activity #1) Choose ONE of the following Clearly identify which of the two you are answering and what work you want to be considered for credit.

   No, doing both questions will not earn you extra credit.

   Find the indefinite integral of:

   (a) $\displaystyle\int \frac{\ln(t)}{\sqrt{t}}\,dt$

   (b) $\displaystyle\int \cos^3(\theta)\sin^3(\theta)\,d\theta$