

PRINT Your Name: _____

Quiz 2 — September 5, 2012 – Section 9 – 10:10 – 11:00

Remove everything from your desk except this page and a pencil or pen.

The solution will be posted soon after the quiz is given.

Circle your answer. **Show your work.** **Check your answer.**

The quiz is worth 5 points.

Find $\int \frac{\cos x + \sin 2x}{\sin x} dx$.

Answer: Use the identity $\sin(\theta + \varphi) = \sin \theta \cos \varphi + \cos \theta \sin \varphi$ to see that the integral is equal to

$$\int \left(\frac{\cos x}{\sin x} + \frac{2 \sin x \cos x}{\sin x} \right) dx = \int \left(\frac{\cos x}{\sin x} + 2 \cos x \right) dx.$$

In the first summand, substitute $u = \sin x$, if necessary. At any rate, the integral is

$$\boxed{\ln |\sin x| + 2 \sin x + C.}$$

Check: The derivative of the proposed answer is

$$\frac{\cos x}{\sin x} + 2 \cos x = \frac{\cos x + 2 \cos x \sin x}{\sin x} = \frac{\cos x + \sin 2x}{\sin x}. \checkmark$$