Quiz #2

Questions 1-4 are all long-response questions. In each case, be careful to indicate your final answer **and show how you obtained it**. Answers with no supporting work will get no credit.

You may assume the following trigonometric identities on this quiz.

      (a) $\sin^2(x) + \cos^2(x) = 1$ (b) $\tan^2(x) + 1 = \sec^2(x)$

      (c) $\sin^2(x) = \frac{1}{2}(1 - \cos(2x))$ (d) $\cos^2(x) = \frac{1}{2}(1 + \cos(2x))$

You may assume the following integral formulas on this quiz.

      (a) $\int \tan(x)\,dx = \ln(|\sec(x)|) + C$ (b) $\int \sec(x)\,dx = \ln(|\sec(x) + \tan(x)|) + C$

You should not use your calculator for any of the problems on this quiz.

1.   **(2 points)**   Evaluate the following indefinite integral to find the most general antiderivative.

$$\int \frac{\sin(x) + 2}{\cos(x)}\,dx.$$

2. **(3 points)** Evaluate the following indefinite integral to find the most general antiderivative.

$$\int \tan^5(x)\,dx.$$

3.   **(3 points)**   Evaluate the following indefinite integral to find the most general antiderivative.

$$\int x\sqrt{1-x^4}\,dx\,.$$

4. **(2 points)** Evaluate the following indefinite integral to find the most general antiderivative.

$$\int \frac{1}{x\sqrt{x^2+9}}\,dx\,.$$