$\frac{Math 172 - Quiz 5}{\text{September 27, 2017}}$

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) Use the definitions of the hyperbolic functions (in terms of exponentials) to prove that

$$\cosh^2 x = \frac{1 + \cosh 2x}{2}.$$

 $\int \sinh 2x \, dx$ 2. (2 points) Evaluate the integral by converting to exponentials:

3. (6 points) Carefully sketch the graphs of $y = x^2 - 2$ and y = x + 4. Then find the area of the region between the graphs.