$\qquad$
September 27, 2017
Score $\qquad$

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

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

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