

EMCF07 – Math 1432, 13209

The answer sheet for this assignment can be found by logging into *CourseWare* at <http://www.casa.uh.edu>, selecting **Math 1432(13209)**, clicking on the **EMCF** tab at the top of the page, and selecting **EMCF07**.

1. Give the slope of the tangent line to the graph of $f(x) = \sinh(2x)$ at $x = 1$.
 - a. $e^2 - 1/e^2$
 - b. $e + 1/e$
 - c. $e - 1/e$
 - d. $e^2 + 1/e^2$
 - e. None of these.
2. Give the slope of the tangent line to the graph of $f(x) = \cosh(2x)$ at $x = 1$.
 - a. $e^2 - 1/e^2$
 - b. $e + 1/e$
 - c. $e - 1/e$
 - d. $e^2 + 1/e^2$
 - e. None of these.
3. $\cosh(\ln(3x)) =$
 - a. $\frac{3x}{2} + \frac{1}{6x}$
 - b. $\frac{3x}{2} - \frac{1}{6x}$
 - c. 0
 - d. $3x$
 - e. None of these.
4. $\int \frac{\cosh(x)}{1 + \sinh(x)} dx =$
 - a. $\ln(\sinh(x)) + C$
 - b. $\arctan(\sinh(x)) + C$
 - c. $\frac{-2}{(1 + \sinh(x))^2} + C$
 - d. $\ln(1 + \sinh(x)) + C$
 - e. None of these.

5. $\int \tanh(x) dx =$
- $\ln(\cosh(x)) + C$
 - $\ln(\operatorname{sech}(x)) + C$
 - $\operatorname{sech}^2(x) + C$
 - $\frac{x}{2} + \frac{1}{2x} + C$
 - None of these.
6. $\int e^x \cosh(x) dx =$ (Hint: Use the definition of hyperbolic cosine.)
- $\frac{1}{2} e^{2x} + x + C$
 - $\frac{1}{4} e^{2x} + \frac{x}{2} + C$
 - $\frac{1}{4} e^{2x} - \frac{x}{2} + C$
 - $e^x \sinh(x) + C$
 - None of these.
7. Give the solution to $\frac{dy}{dt} = 4y$, $y(0) = 2$.
- $4e^{2t}$
 - $2e^{4t}$
 - $4e^{-2t}$
 - $2e^{-4t}$
 - None of these.
8. $\int \sinh(x) \cosh(x) dx =$ (Be careful!)
- $\frac{1}{8} e^{2x} - \frac{1}{8} e^{-2x} + C$
 - $\frac{1}{8} e^{2x} + \frac{1}{8} e^{-2x} + C$
 - $\frac{1}{4} e^{2x} + \frac{1}{4} e^{-2x} + C$
 - $\frac{1}{4} e^{2x} - \frac{1}{4} e^{-2x} + C$
 - None of these.

9. The function $f(x) = \sinh(2x) + x + 3$ is invertible. Give $(f^{-1})'(3)$.
- a. $1/4$
 - b. $1/3$
 - c. $1/2$
 - d. 1
 - e. None of these.
10. The function $f(x) = \sinh(2x) + x + 3$ is invertible. Give the y -intercept for the tangent line to the graph of $f^{-1}(x)$ at $x = 3$.
- a. $1/4$
 - b. $1/3$
 - c. $1/2$
 - d. 1
 - e. None of these.