

EMCF08 – 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 **EMCF08**.

1. Give the slope of the tangent line to the graph of

$$f(x) = \arctan(2x) + 3^{-2x} + \log_3(x+1) \text{ at } x = 0.$$

- a. $1 - 2\ln(3) + \frac{1}{\ln(3)}$
- b. $2 - 2\ln(3) + \frac{1}{\ln(3)}$
- c. $2 - \ln(3) + \frac{1}{\ln(3)}$
- d. $1 - \ln(3) + \frac{1}{\ln(3)}$
- e. None of these.

2. Give the slope of the tangent line to the graph of

$$f(x) = \cosh(3x) + \arcsin(2x) - \ln(2x+1) \text{ at } x = 0.$$

- a. $5 + \ln(2)$
- b. $5 - \frac{1}{\ln(2)}$
- c. 0
- d. 3
- e. None of these.

3. $\int \frac{1}{9+2x^2} dx =$

- a. $\frac{1}{3\sqrt{2}} \arctan\left(\frac{\sqrt{2}}{3}x\right) + C$
- b. $\frac{1}{6} \arctan\left(\frac{2}{3}x\right) + C$
- c. $\frac{1}{\sqrt{2}} \arctan\left(\frac{\sqrt{2}}{3}x\right) + C$
- d. $\frac{1}{2} \arctan\left(\frac{2}{3}x\right) + C$
- e. None of these.

4. $\int_1^4 \frac{2^{-\sqrt{x}}}{\sqrt{x}} dx =$
- $\frac{1}{2\ln(2)}$
 - $\frac{2}{\ln(2)}$
 - $\frac{4}{\ln(2)}$
 - $\frac{1}{4\ln(2)}$
 - None of these.
5. $\int \frac{e^x}{\sqrt{4-e^{2x}}} dx =$
- $\arcsin(e^x) + C$
 - $\frac{1}{2} \arcsin(e^x) + C$
 - $\frac{1}{2} \arcsin\left(\frac{1}{2}e^x\right) + C$
 - $\arcsin\left(\frac{1}{2}e^x\right) + C$
 - None of these.
6. Give the slope of the normal line to the graph of $f(x) = (\cosh(x) + 1)^x - 2x$ at $x = 0$.
- $-1/2$
 - $\frac{1}{\ln(2) - 2}$
 - $\frac{1}{2 - \ln(2)}$
 - $1/2$
 - None of these.
7. Give a value of k so that $\frac{dy}{dt} = ky$, $y(0) = 3$, $y(1) = 5$.
- $\ln(5) - \ln(3)$
 - $3\ln(5)$
 - $-5\ln(3)$
 - $\ln(3/5)$
 - None of these.

8. $\int_0^1 \frac{\arctan(x)}{1+x^2} dx =$

a. $\frac{\pi}{8}$

b. $\frac{\pi^2}{32}$

c. $\frac{\pi^2}{16}$

d. $\frac{\pi^2}{8}$

e. None of these.

9. The function $f(x) = \arctan(2x) + \sinh(2x) + 3$ is invertible. Give $(f^{-1})'(3)$.

a. $1/4$

b. $1/3$

c. $1/2$

d. 1

e. None of these.

10. The function $f(x) = \arctan(2x) + \sinh(2x) + 3$ 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

c. $-1/3$

d. $1/2$

e. None of these.