

## EMCF12 – 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 **EMCF12**.

1. Give the value of  $k$  so that  $\frac{dy}{dx} = ky$ ,  $y(0) = 2$ ,  $y(1) = 3$ .
  - a.  $\ln(3)$
  - b.  $2\ln(3)$
  - c.  $\ln(3/2)$
  - d.  $\frac{1}{2}\ln(3)$
  - e. None of these.
2. Give the slope of the tangent line to the graph of  $f(x) = \arctan(x^2)$  at  $x = 1$ .
  - a. 2
  - b.  $2/5$
  - c.  $1/3$
  - d. 1
  - e. None of these.
3.  $\int \frac{x}{4+x^4} dx =$ 
  - a.  $\frac{1}{2} \arctan\left(\frac{x^2}{2}\right) + C$
  - b.  $\arctan\left(\frac{x^2}{2}\right) + C$
  - c.  $\frac{1}{4} \arctan\left(\frac{x^2}{2}\right) + C$
  - d.  $\frac{1}{8} \arctan\left(\frac{x^2}{2}\right) + C$
  - e. None of these.

4.  $\int \frac{e^x}{\sqrt{9-e^{2x}}} dx =$
- $\frac{2}{3}\sqrt{9-e^{2x}} + C$
  - $2\sqrt{9-e^{2x}} + C$
  - $\frac{1}{3}\sqrt{9-e^{2x}} + C$
  - $\sqrt{9-e^{2x}} + C$
  - None of these.
5. Give the slope of the tangent line to the graph of  $f(x) = \sinh(2x)$  at  $x = 0$ .
- 2
  - 2
  - 1
  - 1
  - None of these.
6.  $\int \frac{\cosh(2x)}{1+\sinh(2x)} dx =$
- $\frac{1}{2}\ln(|\sinh(x)+1|) + C$
  - $\arctan(\sinh(x)) + C$
  - $\frac{-2}{(1+\sinh(x))^2} + C$
  - $\ln(|1+\sinh(x)|) + C$
  - None of these.
7. Give the slope of the tangent line to the graph of  $f(x) = \arctan(2x) + 3^{-2x} + \log_3(x+1)$  at  $x = 0$ .
- $1 - 2\ln(3) + \frac{1}{\ln(3)}$
  - $2 - 2\ln(3) + \frac{1}{\ln(3)}$
  - $2 - \ln(3) + \frac{1}{\ln(3)}$
  - $1 - \ln(3) + \frac{1}{\ln(3)}$
  - None of these.

8.  $\int \sin^2(x)\cos^3(x)dx =$

- a.  $\frac{1}{3}\sin^3(x) - \frac{1}{5}\sin^5(x) + C$
- b.  $\frac{1}{3}\sin^3(x) + \frac{1}{5}\sin^5(x) + C$
- c.  $\frac{1}{2}\sin^2(x) - \frac{1}{4}\sin^4(x) + C$
- d.  $\frac{1}{2}\sin^2(x) + \frac{1}{4}\sin^4(x) + C$
- e. None of these.

9.  $\int \tan^2(x)\sec^4(x)dx =$

- a.  $\frac{1}{3}\tan^3(x) - \frac{1}{5}\tan^5(x) + C$
- b.  $\frac{1}{3}\tan^3(x) + \frac{1}{5}\tan^5(x) + C$
- c.  $\frac{1}{4}\tan^4(x) - \frac{1}{6}\tan^6(x) + C$
- d.  $\frac{1}{4}\tan^4(x) + \frac{1}{6}\tan^6(x) + C$
- e. None of these.

10.  $\int \tan^3(x)\sec(x)dx =$

- a.  $\frac{1}{3}\tan^3(x) - \tan(x) + C$
- b.  $\frac{1}{3}\sec^3(x) - \sec(x) + C$
- c.  $3\tan^3(x) + C$
- d.  $\frac{1}{3}\sec^3(x) + C$
- e. None of these.