

## EMCF11 – 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 **EMCF11**.

1.  $\int_0^1 \arctan(x) dx =$

a.  $\frac{\pi}{8} - \frac{1}{2} \ln(2)$

b.  $\frac{\pi}{4} - \frac{1}{2} \ln(2)$

c.  $\frac{\pi}{4} + \frac{1}{2} \ln(2)$

d.  $\frac{\pi}{8} + \frac{1}{2} \ln(2)$

e. None of these.

2.  $\int x \sin(x) dx =$

a.  $\sin(x) - x \cos(x) + C$

b.  $\sin(x) + x \cos(x) + C$

c.  $\cos(x) - x \sin(x) + C$

d.  $\cos(x) + x \sin(x) + C$

e. None of these.

3.  $\int_0^{\pi/12} \frac{\cos(3x)}{\sin(3x)+1} dx =$

a.  $\frac{1}{3} \ln\left(1 - \frac{\sqrt{2}}{2}\right)$

b.  $\frac{1}{3} \ln\left(1 + \frac{\sqrt{2}}{2}\right)$

c.  $\frac{1}{3} \ln\left(2 + \frac{\sqrt{2}}{2}\right)$

d.  $\frac{1}{3} \ln\left(2 - \frac{\sqrt{2}}{2}\right)$

e. None of these.

4. The function  $f(x) = \ln(2x^2 + 1) + 2x^3 + x + 3$  is invertible. Give  $(f^{-1})'(3)$ .
- 1
  - 1
  - $1/6$
  - $-1/6$
  - $1/3$
  - None of these.
5. Give the y-intercept of the tangent line to the graph of  $f(x) = x2^{3x-1}$  at  $x = 1$ .
- $6\ln(2)$
  - $-6\ln(2)$
  - $12\ln(2)$
  - $-12\ln(2)$
  - None of these.
6.  $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx =$
- $\frac{2}{3}e^{\sqrt{x}} + C$
  - $\frac{1}{2}e^{\sqrt{x}} + C$
  - $e^{\sqrt{x}} + C$
  - $2e^{\sqrt{x}} + C$
  - None of these.
7. Give the slope of the tangent line to the graph of  $f(x) = x2^{3x-1} + \log_2(x)$  at  $x = 1$ .
- $4 + 11\ln(2)$
  - $4 + 12\ln(2) + \frac{1}{\ln(2)}$
  - $4 + 12\ln(2) - \frac{1}{\ln(2)}$
  - $4 - 11\ln(2)$
  - None of these.

8.  $\int_0^1 x 2^{x^2} dx =$

a.  $\frac{2}{\ln(2)}$

b.  $\frac{1}{\ln(2)}$

c.  $\frac{1}{2\ln(2)}$

d.  $\ln(2)$

e. None of these.

9. Solve  $u'(t) = -4u(t)$ ,  $u(0) = 3$ .

a.  $3e^{4t}$

b.  $4e^{-3t}$

c.  $-4e^{3t}$

d.  $3e^{-4t}$

e. None of these.

10. Give the slope of the tangent line to the graph of  $f(x) = (\cos(x) + 1)^{\sin(x)}$  at  $x = 0$ .

a.  $2\ln(2)$

b.  $1 - \ln(2)$

c.  $\ln(2)$

d.  $2\ln(2) - 1$

e. None of these.