

EMCF06 – 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 **EMCF06**.

1. Give the slope of the tangent line to the graph of $f(x) = \arctan(2x)$ at $x = 1$.
 - a. 2
 - b. $2/5$
 - c. $1/3$
 - d. 1
 - e. None of these.
2. Give the slope of the tangent line to the graph of $f(x) = \arcsin(2x)$ at $x = 1/4$.
 - a. $2/\sqrt{3}$
 - b. $2\sqrt{3}$
 - c. $4\sqrt{3}/3$
 - d. 2
 - e. None of these.
3. $\cos(\arcsin(2x)) =$
 - a. $\sqrt{3}x/2$
 - b. $\sqrt{1-4x^2}$
 - c. $2\sqrt{1-x^2}$
 - d. $2/\sqrt{1-x^2}$
 - e. None of these.
4. $\int \frac{x}{1+x^4} dx =$
 - a. $\frac{1}{3} \ln(1+x^3) + C$
 - b. $\frac{1}{4} \arctan(x^4) + C$
 - c. $\frac{1}{4} \ln(1+x^4) + C$
 - d. $\frac{1}{2} \arctan(x^2) + C$
 - e. None of these.

5. $\int \frac{e^x}{1+e^{2x}} dx =$

a. $\frac{1}{2} \ln(1+e^{2x}) + C$

b. $\frac{1}{2} \arctan(e^x) + C$

c. $\frac{1}{2} \ln(1+e^x) + C$

d. $\frac{1}{2} \arctan(e^{2x}) + C$

e. None of these.

6. $\sin(\arctan(x)) =$

a. $x / \sqrt{1+x^2}$

b. $1/(1+x)$

c. $1/(1+x^2)$

d. $x / \sqrt{1-x^2}$

e. None of these.

7. Give the solution to $\frac{dy}{dt} = -2y$, $y(0) = 3$.

a. $-2e^{3t}$

b. $2e^{-3t}$

c. $3e^{-2t}$

d. $-3e^{2t}$

e. None of these.

8. $\int \frac{x}{\sqrt{1-x^4}} dx =$

a. $2\sqrt{1-x^4} + C$

b. $\frac{1}{2} \arcsin(x^2) + C$

c. $\frac{1}{8} \ln(1-x^4) + C$

d. $\frac{1}{4} \arctan(x^4) + C$

e. None of these.

9. The function $f(x) = \arctan(2x) + x + 3$ is invertible. Give $(f^{-1})'(3)$.
- a. $1/4$
 - b. $1/3$
 - c. $1/2$
 - d. 1
 - e. None of these.
10. The function $f(x) = \arctan(2x) + x + 3$ 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.