EMCF02 – Math 1432

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 **EMCF02**.

1. Evaluate $\frac{d}{dx}\ln\left(x^2+1\right)$ at $x=1$.
   a. 1
   b. 2
   c. 4
   d. 1/2
   e. None of these.
2. Give the slope of the tangent line to the graph of $f\left(x\right)=x\ln\left(3x-2\right)$ at $x=1$.
   a. 4
   b. 3
   c. 2
   d. 1
   e. None of these.
3. Give the *y*-intercept of the tangent line to the graph of $f\left(x\right)=x\ln\left(3x-2\right)$ at $x=1$.
   a. -2
   b. -1
   c. 0
   d. 3
   e. None of these.
4. Evaluate $\frac{d}{dx}\ln\left(\cos\left(2x\right)\right)$ at $x=\frac{\pi}{6}$.
   a. $2/\sqrt{3}$
   b. $2\sqrt{3}$
   c. $\sqrt{3}/2$
   d. 1/2
   e. None of these.
5. The function $f(x)=x\ln\left(x^3\right)$ is invertible on the interval [1/2,3]. Give the slope of the tangent line to the graph of $f^{-1}(x)$ at $x = 0$.
   a. 3
   b. 1/3
   c. 2/3
   d. $x = 0$ is not in the domain of $f^{-1}(x)$
   e. None of these.

6. $\int_1^2 \frac{1}{x}\,dx =$
   a. 1/2
   b. 2
   c. ln(2)
   d. 1
   e. None of these.
7. $\int_1^2 \frac{x}{x^2+1}\,dx =$
   a. $\ln(5/2)$
   b. $2\ln(5/2)$
   c. $\ln\left(\sqrt{5/2}\right)$
   d. $\ln(2/5)$
   e. None of these.
8. $\int_0^{\pi/12} \frac{\cos(2x)}{\sin(2x)+1}\,dx =$
   a. $\ln(3/2)$
   b. $2\ln(3/2)$
   c. $\ln\left(\sqrt{3/2}\right)$
   d. $\ln(2/3)$
   e. None of these.
9. The function $f(x)=\ln(2x-1)+3x^3+x+1$ is invertible. Give $\left(f^{-1}\right)'(5)$.
   a. -1/12
   b. -5/12
   c. 12
   d. 1/12
   e. -12
   f. None of these.
10. The function $f(x)=\ln(2x-1)+3x^3+x+1$ is invertible. Give the *y*-intercept for the tangent line to the graph of $f^{-1}(x)$ at $x=1$.
   a. 59/12
   b. 47/12
   c. 61/12
   d. 53/12
   e. 2
   f. None of these.