EMCF04 – 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 **EMCF04**.

1. $2^{\log_2(3x)} =$
   a. $2^{\log_2(3x)}\dfrac{1}{x}$
   b. $3x$
   c. $2^{\log_2(3x)}\dfrac{3}{x}$
   d. $2^{\log_2(3x)}\dfrac{1}{x\ln(3)}$
   e. None of these.
2. Give the slope of the tangent line to the graph of $f(x)=x2^{3(x-1)}$ at $x=1$.
   a. $1+\ln(2)$
   b. $1+2\ln(2)$
   c. $1+3\ln(2)$
   d. $1+4\ln(2)$
   e. None of these.
3. Give the *y*-intercept of the tangent line to the graph of $f(x)=x2^{3(x-1)}$ at $x=1$.
   a. $-2\ln(2)$
   b. $-\ln(2)$
   c. 0
   d. $-3\ln(2)$
   e. None of these.
4. $\displaystyle\int\frac{3^{\sqrt{x}}}{\sqrt{x}}dx =$
   a. $\dfrac{2}{\ln(3)}3^{\sqrt{x}}+C$
   b. $2\cdot3^{\sqrt{x}}+C$
   c. $2\ln(3)\cdot3^{\sqrt{x}}+C$
   d. $\dfrac{\ln(3)}{2}3^{\sqrt{x}}+C$
   e. None of these.

5. The function $f(x) = x\log_{10}(x+9) - 1$ 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. 10
   b. $\ln(10)$
   c. $1/\ln(10)$
   d. $x = 0$ is not in the domain of $f^{-1}(x)$
   e. None of these.
6. $\log_5\left(5^{4x}\right) =$
   a. $4\ln(5)$
   b. $4x$
   c. $\dfrac{4}{\ln(5)}$
   d. $\dfrac{\ln(5)}{4}$
   e. None of these.
7. Give the slope of the tangent line to the graph of $f(x) = (3x-1)3^{2x+1}$ at $x = 0$.
   a. $9 - 6\ln(3)$
   b. $9 + 6\ln(3)$
   c. $9 - 3\ln(3)$
   d. $9 + 3\ln(3)$
   e. None of these.
8. $\int_0^1 x3^{x^2}\,dx =$
   a. $\dfrac{1}{2}(\ln(3)-1)$
   b. $\ln(3)-1$
   c. $\ln(3)$
   d. $\dfrac{1}{\ln(3)}$
   e. None of these.

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

   a. $\dfrac{\ln(3)}{1+\ln(3)}$

   b. $\dfrac{1}{1+\ln(3)}$

   c. $\dfrac{3}{1+\ln(3)}$

   d. $\dfrac{3}{\ln(3)}$

   e. None of these.

10. The function $f(x) = x + 3^x + 2$ is invertible. Give the *y*-intercept for the tangent line to the graph of $f^{-1}(x)$ at $x = 3$.

   a. $\dfrac{-3}{1+\ln(3)}$

   b. $\dfrac{3}{1+\ln(3)}$

   c. $\dfrac{3\ln(3)}{1+\ln(3)}$

   d. $\dfrac{-3\ln(3)}{1+\ln(3)}$

   e. $\dfrac{-\ln(3)}{1+\ln(3)}$

   f. None of these.