EMCF14 – 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 **EMCF14**.

1. $\int \frac{9}{(x-6)(x+3)}\,dx =$
   a. $\ln\left|\frac{x-6}{x+3}\right| + C$
   b. $9\ln\left|\frac{x+3}{x-6}\right| + C$
   c. $\ln|x-6| - 2\ln|x+3| + C$
   d. $3\ln|x-6| - 2\ln|x+3| + C$
   e. None of these.
2. Give the quotient associated with $\frac{2x^4 - 5x^3 + 5x^2 + 4}{x^3 - 2x^2}$.
   a. $2x+1$
   b. $2x-1$
   c. $2x-3$
   d. $2x+3$
   e. None of these.
3. Give the remainder associated with $\frac{2x^4 - 5x^3 + 5x^2 + 4}{x^3 - 2x^2}$.
   a. $2x^2+3$
   b. $3x^2+1$
   c. $3x^2+4$
   d. $2x^2+1$
   e. None of these.

4. What trig substitution would you use to compute $\int \frac{x^3}{\sqrt{x^2-4}}\,dx$?

   a. $x = 2\cos(\theta)$
   b. $x = 2\tan(\theta)$
   c. $x = 2\sin(\theta)$
   d. $x = 2\sec(\theta)$
   e. None of these.

5. What trig substitution would you use to compute $\int \frac{x^3}{\sqrt{x^2+4}}\,dx$?

   a. $x = 2\cos(\theta)$
   b. $x = 2\tan(\theta)$
   c. $x = 2\sin(\theta)$
   d. $x = 2\sec(\theta)$
   e. None of these.

6. What trig substitution would you use to compute $\int \frac{x^3}{\sqrt{4-x^2}}\,dx$?

   a. $x = 2\cos(\theta)$
   b. $x = 2\tan(\theta)$
   c. $x = 2\sin(\theta)$
   d. $x = 2\sec(\theta)$
   e. None of these.

7. $\int \frac{3x-1}{x^2+4}\,dx =$

   a. $\frac{3}{2}\ln\left(x^2+1\right) - \frac{1}{2}\arctan\left(\frac{x}{2}\right) + C$
   b. $\frac{3}{2}\ln\left(x^2+1\right) + \frac{1}{2}\arctan\left(\frac{x}{2}\right) + C$
   c. $\frac{3}{2}\ln\left(x^2+1\right) - \arctan\left(\sqrt{\frac{x}{2}}\right) + C$
   d. $\ln\left(\left(x^2+1\right)^{3/2}\right) - \arctan\left(\sqrt{\frac{x}{2}}\right) + C$
   e. None of these.

8. $\dfrac{2x-1}{x(x-1)(x^2+x+1)} = \dfrac{A}{x} + \dfrac{B}{x-1} + \dfrac{Cx+D}{x^2+x+1}$. Give $A+B+C+D$.

a. $-5/3$
b. $-4/3$
c. $-2/3$
d. $-1/3$
e. None of these.

9. **Give the value below that is closest** to $\int_2^3 \dfrac{2x-1}{x(x-1)(x^2+x+1)}\,dx$.

a. 0.108
b. 0.098
c. 0.128
d. 0.118

10. $\dfrac{x^5}{x^2-3x-4} = x^3+3x^2+13x+51+\dfrac{A}{x+1}+\dfrac{B}{x-4}$. Give $A+B$.

a. 203
b. 204
c. 205
d. 206
e. None of these.