EMCF09 – 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 **EMCF09**.

1. If we use integration by parts to evaluate $\int xe^{-2x}dx$ then we should choose
   a. $u = e^{-2x},\ dv = xdx$
   b. $u = x,\ dv = e^{-2x}dx$
   c. $u = x,\ dv = -\frac{1}{2}e^{-2x}dx$
   d. $u = xe^{-2x},\ dv = dx$
   e. None of these.
2. If we use integration by parts to evaluate $\int x\ln(x+1)dx$ then we should choose
   a. $u = \ln(x+1),\ dv = xdx$
   b. $u = x,\ dv = \ln(x+1)dx$
   c. $u = x,\ dv = \frac{1}{x+1}dx$
   d. $u = x\ln(x+1),\ dv = dx$
   e. None of these.
3. If we use integration by parts to evaluate $\int x\arctan(x)dx$ then we should choose
   a. $u = \frac{1}{1+x^2},\ dv = xdx$
   b. $u = x,\ dv = \arctan(x)dx$
   c. $u = x\arctan(x),\ dv = dx$
   d. $u = \arctan(x),\ dv = xdx$
   e. None of these.
4. If we use integration by parts to evaluate $\int x\cos(2x)dx$ then we should choose
   a. $u = x,\ dv = \sin(2x)dx$
   b. $u = x\cos(2x),\ dv = dx$
   c. $u = x,\ dv = \cos(2x)dx$
   d. $u = \cos(2x),\ dv = xdx$
   e. None of these.

5. If we use integration by parts to evaluate $\int (x^2-3x+1)\sin(3x)\,dx$ then we have to do "parts" twice, and the first time we should choose
   a. $u=\sin(3x),\ dv=(x^2-3x+1)\,dx$
   b. $u=\sin(3x),\ dv=\left(\frac{1}{3}x^3-\frac{3}{2}x^2+x\right)dx$
   c. $u=x^2-3x+1,\ dv=-\frac{1}{3}\cos(3x)\,dx$
   d. $u=x^2-3x+1,\ dv=\sin(3x)\,dx$
   e. None of these.
6. If we use integration by parts to evaluate $\int (x^2-3x+1)e^{-x}dx$ then we have to do "parts" twice. When we do parts the first time, we get
   a. $(2x-3)e^{-x}+\int (x^2-3x+1)e^{-x}dx$
   b. $-(x^2-3x+1)e^{-x}+\int (2x-3)e^{-x}dx$
   c. $-(x^2-3x+1)e^{-x}-\int (2x-3)e^{-x}dx$
   d. $(2x-3)e^{-x}-\int (x^2-3x+1)e^{-x}dx$
   e. None of these.
7. $\int x\sin(2x)\,dx=$
   a. $\frac{1}{4}\sin(2x)+\frac{1}{2}x\cos(2x)+C$
   b. $\frac{1}{2}\sin(2x)-\frac{1}{4}x\cos(2x)+C$
   c. $\frac{1}{4}\sin(2x)-\frac{1}{2}x\cos(2x)+C$
   d. $\frac{1}{2}\sin(2x)+\frac{1}{4}x\cos(2x)+C$
   e. None of these.
8. $\int_0^{1/2} x\arctan(2x)dx=$ (Note: $\int \frac{x^2}{1+x^2}dx=\int \frac{x^2+1-1}{1+x^2}dx=\int\left(1-\frac{1}{1+x^2}\right)dx$)
   a. $\frac{\pi}{8}-\frac{1}{8}$
   b. $\frac{\pi}{16}-\frac{1}{8}$
   c. $\frac{\pi}{8}-\frac{1}{16}$
   d. $\frac{\pi}{16}-\frac{1}{16}$
   e. None of these.

9. $\int xe^{-3x}dx =$

   a. $-\frac{1}{9}(1+3x)e^{-3x}+C$

   b. $-\frac{1}{9}(1-3x)e^{-3x}+C$

   c. $\frac{1}{9}(1-3x)e^{-3x}+C$

   d. $\frac{1}{9}(1+3x)e^{-3x}+C$

   e. None of these.

10. $\int_0^1 x\ln(2x+1)\,dx =$

   a. $\frac{1}{4}\ln(3)$

   b. $\frac{1}{4}(\ln(3)-1)$

   c. $\frac{3}{8}(\ln(3)-1)$

   d. $\frac{3}{8}\ln(3)$

   e. None of these.