

Spring 2013

**PROBLEM 10:** Find the general solution of

$$xy' = y + \frac{x^2}{x+1}.$$

- (a)  $x \ln|x+1| + x + C$    (b)  $x \ln|x+1| + Cx^2$    (c)  $x \ln|x+1| + Cx$   
(d)  $x^2 \ln|x+1| + Cx$    (e)  $x \ln|x+1| + x^2 + C$    (f)  $Cx \ln|x+1| + x$

**Fall 2012**

7. Suppose  $y = y(x)$  satisfies the differential equation  $xy' = \cos x - y$  and the initial condition  $y(\frac{\pi}{2}) = 0$ . Then  $y(\pi)$  is:

- (a) 0      (b)  $\pi$       (c)  $-\pi$       (d)  $-\frac{1}{\pi}$       (e)  $\frac{1}{\pi}$       (f) 1

Spring 2012

7. Find the solution to the differential equation

$$xy' = \frac{2y}{x-2} + x^2 - 2x, \quad x > 2$$

satisfying  $y(4) = 4$ .

A)  $y = \frac{x^3 - 3x^2}{4}$

B)  $y = \frac{x^2 - 2x}{2}$

C)  $y = e^{x^2} - e^{4x} + 4$

D)  $y = \frac{\ln(x) - x}{2}$

E)  $y = \frac{x^2 - x}{3}$

F)  $y = \frac{x^3 + x}{17}$

**Fall 2011**

11. Let  $y(x)$  be the solution to the initial-value problem  $x \frac{dy}{dx} - 2y = x^3$  and  $y(1) = 0$ .  
What is  $y(3)$ ?
- (A) 1    (B) 3    (C) 6    (D) 9    (E) 12    (F) 15    (G) 18    (H) 27

Math 104- Rimmer  
Hand in Hw # 9

Name \_\_\_\_\_

**ANSWERS:**

**SPRING 2013 # 10: C**

**FALL 2012 # 7: D**

**SPRING 2012 # 7: B**

**FALL 2011 # 11: G**