

Even Numbered Answers for Lesson 12 through Lesson 19:

• **Lesson 12 §6.1**

- #2)  $e^{x/2}(2x - 4) + C$   
#4)  $-e^{-x}(5 - 2x) + C$   
#10)  $(2/3)x(1 - x)^{3/2} - (4/15)(1 - x)^{5/2} + C$   
#14)  $x\sqrt{2x + 1} - (2/3)(2x + 1)^{3/2} + C$

• **Lesson 13 §6.1 (cont...)**

- #16)  $-17/3$   
#18)  $1 - (2/e)$   
#40)  $(1/2)x^2 \ln x - (1/4)x^2 - 2 - 2 \ln 2$   
#42)  $4,000 - 10,000e^{-3/20}$

• **Lesson 14 §6.2**

- #6) Diverges to infinity  
#8) 1  
#10) 1

• **Lesson 15 §6.2 (cont...)**

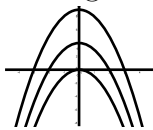
- #14)  $1/2$   
#26) Diverges to infinity

• **Lesson 16 §6.3**

- #6) 6.89  
#10) .063

• **Lesson 17 §7.1**

- #6)  $(\ln 4)^2(\ln 3)^2$   
#14)  $x^2 + y^2 \leq 9$ , the DISK centered at the origin with radius 3.

- #20)  $y = -x^2, y = 4 - x^2, y = 9 - x^2,$  

• Lesson 18 §7.2

#2)

$$\frac{\partial z}{\partial x} = 10xy + 2y^3$$
$$\frac{\partial z}{\partial y} = 5x^2 + 6xy^2 + 6y$$

#4)

$$\frac{\partial f}{\partial x} = 3(x + xy + y)^2(1 + y)$$
$$\frac{\partial f}{\partial y} = 3(x + xy + y)^2(x + 1)$$

#6)

$$\frac{\partial z}{\partial t} = (2t)/(s^3)$$
$$\frac{\partial z}{\partial s} = (-3t^2)/(s^4)$$

#8)

$$\frac{\partial f}{\partial x}(0, -1) = 14$$
$$\frac{\partial f}{\partial y}(0, -1) = -10$$

• Lesson 19 §7.2 (cont...)

#22)

$$f_{xx} = 0 \quad f_{xy} = \frac{-1}{(y-1)^2}$$
$$f_{yy} = \frac{2(x+1)}{(y-1)^3} \quad f_{yx} = \frac{-1}{(y-1)^2}$$

#24)

$$f_{uu} = \frac{2(v^2 - u^2)}{(u^2 + v^2)^2} \quad f_{uv} = \frac{-4uv}{(u^2 + v^2)^2}$$
$$f_{vu} = \frac{-4uv}{(u^2 + v^2)^2} \quad f_{vv} = \frac{2(u^2 - v^2)}{(u^2 + v^2)^2}$$

#38)  $Q_K(630, 830) = 10.92$  and  $Q_L(630, 830) = 19.33$

#62)  $\frac{-24}{(x-y)^2} \cdot 3t^2 + \frac{2x}{(x-y)^2} \cdot (-2t)$

#64) 45.8

#66) 222, increasing.