**1.**

(Points: 1)     **Find the slope of the line tangent to the graph of the function at the given value of x.**y = x4 + 7x3 + 2x + 2; x = 3

1. a. 146
2. b. 148
3. c. 299
4. d. 301



**2.**

(Points: 1)     **Find the slope of the line tangent to the graph of the function at the given value of x.**y = -x-5 + x-3; x = 1

1. a. -8
2. b. 2
3. c. -2
4. d. 8



**3.**

(Points: 1)     **Find the slope of the line tangent to the graph of the function at the given value of x.**y = 4x3/2 - 5x1/2; x = 16

1. a.
2. b.
3. c.
4. d.



**4.**

(Points: 1)     **Find an equation for the line tangent to given curve at the given value of x.**y = x2 - x at x = -3

1. a. y = -7x + 9
2. b. y = -7x - 9
3. c. y = -7x + 6
4. d. y = -7x - 6



**5.**

(Points: 1)     **Find an equation for the line tangent to given curve at the given value of x.**y = x3 - 36x - 1 at x = 6

1. a. y = 72x - 433
2. b. y = 72x - 1
3. c. y = -1
4. d. y = 71x - 433

  http://elearning.kirkwood.edu/webct/images/shim.gif

**6.**

(Points: 1)     **Find all values of x (if any) where the tangent line to the graph of the function is horizontal.**y = x2 + 2x - 3

1. a. 1
2. b.
3. c. 0
4. d. -1



**7.**

(Points: 1)     **Find all values of x (if any) where the tangent line to the graph of the function is horizontal.**y = x3 - 3x2 + 1

1. a. 0
2. b. 0, 2
3. c. 2
4. d. -2, 0, 2



**8.**

(Points: 1)     **Find all values of x (if any) where the tangent line to the graph of the function is horizontal.**y = 2 + 8x - x2

1. a. -8
2. b. 8
3. c. -4
4. d. 4

  http://elearning.kirkwood.edu/webct/images/shim.gif

**9.**

(Points: 1)     **Solve the following.**Find all points of the graph of f(x) = 3x2 + 9x whose tangent lines are parallel to the line y - 33x = 0.

1. a. (4, 84)
2. b. (7, 210)
3. c. (6, 162)
4. d. (5, 120)



**10.**

(Points: 1)     **Solve the problem.**The total cost to produce x handcrafted wagons is Find the marginal cost when 

1. a. 331
2. b. 444
3. c. 544
4. d. 431



**11.**

(Points: 1)     **Solve the problem.**The profit in dollars from the sale of x thousand compact disc players is Find the marginal profit when the value of x is 3.

1. a. $22
2. b. $32
3. c. $27
4. d. $17



**12.**

(Points: 1)     **Write an equation of the tangent line to the graph of y = f(x) at the point on the graph where x has the indicated value.**f(x) = , x = 0

1. a. y = 12x + 3
2. b. y = - 12x + 3
3. c. y = - 12x - 3
4. d. y = 12x - 3



**13.**

(Points: 1)     **Use the quotient rule to find the derivative.**g(t) = 

1. a. g'(t) = 
2. b. g'(t) = 
3.  c. g'(t) = 
4. d. g'(t) = 



**14.**

(Points: 1)     **Solve the problem.**The total cost to produce x units of perfume is Find the marginal average cost function.

1. a. 35 - 
2. b. 70 - 
3. c. 70x + 41
4. d. 35x + 41 +



**15.**

(Points: 1)     **Solve the problem.**The total profit from selling x units of cookbooks is Find the marginal average profit function.

1. a. 54 - 
2. b. 54 - 
3. c. 54x - 56
4. d. 54x - 111



**16.**

(Points: 1)     **Write an equation of the tangent line to the graph of y = f(x) at the point on the graph where x has the indicated value.**f(x) = (-5x2 - 5x - 2)(-4x - 5), x = 0

1. a. y = x + 10
2. b. y = 33x + 10
3. c. y = 33x - 10
4. d. y = x - 10



**17.**

(Points: 1)     **Use the product rule to find the derivative.**f(x) = (x2 - 4x + 2)(2x3 - x2 + 4)

1. a. f'(x) = 2x4 - 32x3 + 24x2 + 4x - 16
2. b. f'(x) = 10x4 - 36x3 + 24x2 + 4x - 16
3. c. f'(x) = 2x4 - 36x3 + 24x2 + 4x - 16
4. d. f'(x) = 10x4 - 32x3 + 24x2 + 4x - 16



**18.**

(Points: 1)     **Use the product rule to find the derivative.**f(x) = (6x - 4)(6x + 1)

1. a. f'(x) = 72x - 30
2. b. f'(x) = 72x - 18
3. c. f'(x) = 72x - 9
4. d. f'(x) = 36x - 18



**19.**

(Points: 1)     **Use the product rule to find the derivative.**f(x) = (6 - 2)(5 + 7)

1. a. f'(x) = 30x + 32x1/2
2. b. f'(x) = 30x + 16x1/2
3. c. f'(x) = 30 + 32x-1/2
4. d. f'(x) = 30 + 16x-1/2



**20.**

(Points: 1)     **Give an appropriate answer.**If g'(3) = 4 and h'(3) = -1, find f'(3) for f(x) = 5g(x) + 3h(x) + 2.

1. a. 17
2. b. 23
3. c. 25
4. d. 19

**1.**

(Points: 1)     **Let f(x) = 8x2 - 5x and g(x) = 7x + 9.  
Find the composite.**f[g(3)]

1. a. 408
2. b. 7050
3. c. 1212
4. d. 618



**2.**

(Points: 1)     **Let f(x) = 8x2 - 5x and g(x) = 7x + 9.  
Find the composite.**g[f(-3)]

1. a. 408
2. b. 1212
3. c. 618
4. d. 7050



**3.**

(Points: 1)     **Let f(x) = 8x2 - 5x and g(x) = 7x + 9.  
Find the composite.**g[f(k)]

1. a. 392k2 + 973k + 603
2. b. 56k2 + 35k + 9
3. c. 392k2 - 973k + 603
4. d. 56k2 - 35k + 9



**4.**

(Points: 1)     **Find f[g(x)] and g[f(x)].**f(x) = 5x + 9; g(x) = 4x - 7

1. a. f[g(x)] = 20x + 29  
   g[f(x)] = 20x - 26
2. b. f[g(x)] = 20x + 26  
   g[f(x)] = 20x - 29
3. c. f[g(x)] = 20x - 26  
   g[f(x)] = 20x + 29
4. d. f[g(x)] = 20x - 29  
   g[f(x)] = 20x + 26



**5.**

(Points: 1)     **Find f[g(x)] and g[f(x)].**f(x) = 5x3 + 8; g(x) = 2x

1. a. f[g(x)] = 10x3 + 16  
   g[f(x)] = 40x3 + 8
2. b. f[g(x)] = 40x3 + 16  
   g[f(x)] = 10x3 + 8
3. c. f[g(x)] = 10x3 + 8  
   g[f(x)] = 40x3 + 16
4. d. f[g(x)] = 40x3 + 8  
   g[f(x)] = 10x3 + 16



**6.**

(Points: 1)     **Find the equation of the tangent line to the graph of the given function at the given value of x.**f(x) = (x2 + 28)4/5; x = 2

1. a. y = x + 
2. b. y = x + 
3. c. y = x
4. d. y = x + 



**7.**

(Points: 1)     **Find all values of x for the given function where the tangent line is horizontal.**f(x) = 

1. a. 0, 9
2. b. -9, 9
3. c. -9
4. d. 0, -9



**8.**

(Points: 1)     **Find the derivative.**y = e7x2 + x

1. a. 14xe7x2 + 1
2. b. 14xex2 + 1
3. c. 14xe + 1
4. d. 14xe2x + 1



**9.**

(Points: 1)     **Find the derivative.**y = 

1. a. 
2. b. 
3. c. 
4. d. 



**10.**

(Points: 1)     **Find the derivative.**y = 57x

1. a. 35 (ln 7) 57x
2. b. 5 (ln 7) 57x
3. c. 7 (ln 5) 57x
4. d. 35 (ln 5) 57x



**11.**

(Points: 1)     **Find the derivative.**y = 19-x

1. a. -19-x
2. b. ln 19 (19-x)
3. c. - ln 19 (19-x)
4. d. 19-x



**12.**

(Points: 1)     **Solve the problem.**The sales in thousands of a new type of product are given by S(t) = 280 - 60e-.5t, where t represents time in years. Find the rate of change of sales at the time when t = 4.

1. a. -220.3 thousand per year
2. b. 4.1 thousand per year
3. c. 220.3 thousand per year
4. d. -4.1 thousand per year



**13.**

(Points: 1)     **Find the derivative of the function.**y = ln 6x

1. a. 
2. b. - 
3. c. 
4. d. - 



**14.**

(Points: 1)     **Find the derivative of the function.**y = ln 7x2

1. a. 
2. b. 
3. c. 
4. d. 



**15.**

(Points: 1)     **Find the derivative of the function.**y = ln (8 + x2)

1. a. 
2. b. 
3. c. 
4. d. 



**16.**

(Points: 1)     **Find the derivative.**y = 

1. a. 
2. b. 
3. c. 
4. d. x ex



**17.**

(Points: 1)     **Find the derivative.**y = ex5 ln x

1. a. 
2. b. 
3. c. 
4. d. 



**18.**

(Points: 1)     **Find the derivative of the function.**y = log (2x)

1. a. 
2. b. 
3. c. 
4. d. 



**19.**

(Points: 1)     **Find the derivative of the function.**y = log (4x - 1)

1. a. 
2. b. 
3. c. 
4. d. 



**20.**

(Points: 1)     **Solve the problem.**Assume the total revenue from the sale of x items is given by while the total cost to produce x items is Find the approximate number of items that should be manufactured so that profit, is maximum.

1. a. 256 items
2. b. 62 items
3. c. 317 items
4. d. 195 items



