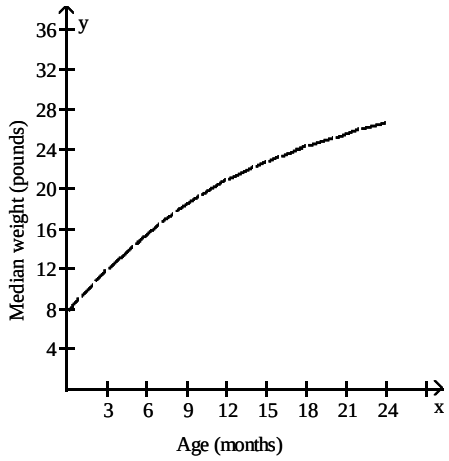
MAC 2233 -- Business Calculus
Practice for the Final Exam

Solve the problem.

1) The graph shows the median weight of girls between the ages of 0 and 24 months. 1) _____



Use the graph to find the average growth rate of a typical girl during the first six months of her life. Give your answer in pounds per month.

A) 1.3 lb/month B) 1.6 lb/month C) 2.6 lb/month D) 1.0 lb/month

2) Suppose that the dollar cost of producing x radios is $c(x) = 200 + 10x - 0.2x^2$. Find the average cost per radio of producing the first 30 radios. 2) _____

A) $320.00 B) $120.00 C) $4.00 D) $2.00

Find the derivative.

3) $f(x) = 9x^{7/5} - 5x^2 + 10^4$ 3) _____

A) $f'(x) = \frac{63}{5}x^{2/5} - 10x + 4000$ B) $f'(x) = \frac{63}{5}x^{6/5} - 10x$

C) $f'(x) = \frac{63}{5}x^{2/5} - 10x$ D) $f'(x) = \frac{63}{5}x^{6/5} - 10x + 4000$

4) $y = \frac{7}{x} - \frac{x}{5}$ 4) _____

A) $\frac{dy}{dx} = -\frac{7}{x^2} + \frac{x}{5}$ B) $\frac{dy}{dx} = \frac{7}{x^2} - \frac{1}{5}$

C) $\frac{dy}{dx} = -7x - \frac{1}{5}$ D) $\frac{dy}{dx} = -\frac{7}{x^2} - \frac{1}{5}$

Find f '(a) for the given value of a.

5) $f(x) = \frac{7}{x} - \sqrt{x}$, $a = 4$ 5) _____

A) $\frac{3}{16}$ B) $-\frac{11}{16}$ C) $-\frac{3}{16}$ D) $\frac{11}{16}$

Find the derivative.

6) $y = \sqrt{x}(5x - 5) + 25x - 25$ 6) _____

A) $7.5x^{1/2} - 5x^{-1/2} + 25$ B) $3.33x^{1/2} - 2.5x^{-1/2} + 25$

C) $3.33x^{1/2} - 5x^{-1/2} + 25$ D) $7.5x^{1/2} - 2.5x^{-1/2} + 25$

Differentiate.

7) $y = \dfrac{x^2 - 3x + 2}{x^7 - 2}$ 7) _____

A) $\dfrac{dy}{dx} = \dfrac{-5x^8 + 19x^7 - 14x^6 - 4x + 6}{(x^7 - 2)^2}$ B) $\dfrac{dy}{dx} = \dfrac{-5x^8 + 18x^7 - 13x^6 - 4x + 6}{(x^7 - 2)^2}$

C) $\dfrac{dy}{dx} = \dfrac{-5x^8 + 18x^7 - 14x^6 - 4x + 6}{(x^7 - 2)^2}$ D) $\dfrac{dy}{dx} = \dfrac{-5x^8 + 18x^7 - 14x^6 - 3x + 6}{(x^7 - 2)^2}$

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.

8) $f(x) = (-3x^2 + 3x + 2)(-2x + 5)$, $x = 0$ 8) _____

A) $y = \dfrac{1}{11}x - 10$ B) $y = 11x + 10$ C) $y = 11x - 10$ D) $y = \dfrac{1}{11}x + 10$

Differentiate.

9) $f(x) = \sqrt{13x - x^5}$ 9) _____

A) $f'(x) = \dfrac{1}{2\sqrt{13 - 5x^4}}$ B) $f'(x) = \dfrac{-5x^4}{\sqrt{13x - x^5}}$

C) $f'(x) = \dfrac{1}{2\sqrt{13x - x^5}}$ D) $f'(x) = \dfrac{13 - 5x^4}{2\sqrt{13x - x^5}}$

10) $f(x) = (2x^5 - 4x^4 + 3)^{308}$ 10) _____

A) $f'(x) = 308(2x^5 - 4x^4 + 3)^{307}(5x^4 - 4x^3)$

B) $f'(x) = 308(2x^5 - 4x^4 + 3)^{307}$

C) $f'(x) = 308(10x^4 - 16x^3)^{307}$

D) $f'(x) = 308(2x^5 - 4x^4 + 3)^{307}(10x^4 - 16x^3)$

11) $y = (x + 1)^2(x^2 + 1)^{-3}$ 11) _____

A) $\dfrac{dy}{dx} = -2(x + 1)(x^2 + 1)^{-4}(2x^2 + 3x - 1)$ B) $\dfrac{dy}{dx} = 2(x + 1)(x^2 + 1)^{-4}(2x^2 + 3x - 1)$

C) $\dfrac{dy}{dx} = 2(x + 1)(x^2 + 1)^{-4}(2x^2 - 3x - 1)$ D) $\dfrac{dy}{dx} = -2(x + 1)(x^2 + 1)^{-4}(2x^2 - 3x - 1)$

Solve the problem.

12) $1200 is deposited in an account with an interest rate of r% per year, compounded monthly. At the end of 8 years, the balance in the account is given by $A = 1200\left(1 + \dfrac{r}{1200}\right)^{96}$. Find the rate of change of A with respect to r when r = 6. Round answer to the nearest hundredth, if necessary. 12) _____

A) $\dfrac{dA}{dr} = 96.96$ B) $\dfrac{dA}{dr} = 154.96$ C) $\dfrac{dA}{dr} = 154.19$ D) $\dfrac{dA}{dr} = 96.48$

Find $\frac{d^2y}{dx^2}$.

13) $y = x^2 + \sqrt{x}$ 13) _____

A) $\frac{2x^{3/2} + 1}{x^{3/2}}$ B) $\frac{8x^{3/2} - 1}{4x^{3/2}}$ C) $\frac{2x^{3/2} - 1}{x^{3/2}}$ D) $\frac{8x^{3/2} + 1}{4x^{3/2}}$

Solve the problem.

14) If s is a distance given by $s(t) = 3t^4 + 5t^3 + 4t$, find the acceleration. 14) _____

A) $12t^2 + 15t$ B) $36t^2 + 30t$ C) $12t^3 + 15t^2 + 4$ D) $36t + 30$

Find the relative extrema of the function, if they exist.

15) $f(x) = 3x^4 + 16x^3 + 24x^2 + 32$ 15) _____

A) Relative minimum at (0, 32)
B) Relative maximum at (−2, 48), relative minimum at (0, 32)
C) Relative minimum at (−2, 48)
D) Relative minimum at (−2, 48), relative maximum at (0, 32)

Find the points of inflection.

16) $f(x) = \frac{4}{3}x^3 - 12x^2 + 10x + 46$ 16) _____

A) (3, −26) B) (0, 4) C) (3, 0) D) (3, 4)

Solve the problem.

17) The Olympic flame at the 1992 Summer Olympics was lit by a flaming arrow. As the arrow moved d feet horizontally from the archer, assume that its height h, in feet, was approximated by the function 17) _____

$h = -0.002d^2 + 0.6d + 6.4$.

Find the relative maximum of the function.

A) (300, 96.4) B) (0, 6.4) C) (150, 45) D) (150, 51.4)

Determine where the given function is increasing and where it is decreasing.

18) $f(x) = x^4 - 18x^2 + 4$ 18) _____

A) Decreasing on $(-\infty, -3]$ and $[0, 3]$, increasing on $[-3, 0]$ and $[3, \infty)$
B) Increasing on $(-\infty, -3]$ and $[3, \infty)$, decreasing on $[-3, 3]$
C) Increasing on $(-\infty, -3]$ and $[0, 3]$, decreasing on $[-3, 0]$ and $[3, \infty)$
D) Decreasing on $(-\infty, -3]$ and $[3, \infty)$, increasing on $[-3, 3]$

Solve the problem.

19) Given the revenue and cost functions $R = 30x - 0.3x^2$ and $C = 3x + 13$, where x is the daily production, find the rate of change of profit with respect to time when $x = 10$ units and $\frac{dx}{dt} = 8$ units per day. 19) _____

A) \$211.2 per day B) \$168 per day C) \$210 per day D) \$192 per day

20) A rectangular swimming pool 17 m by 10 m is being filled at the rate of 0.6 m^3/min. How fast is the height h of the water rising? 20) _____

A) 0.84 m/min B) 102 m/min C) 0.0035 m/min D) 0.20 m/min

Find dy/dx by implicit differentiation.

21) $x^3 + 3x^2y + y^3 = 8$ 21) _____

A) $-\dfrac{x^2 + 3xy}{x^2 + y^2}$ B) $\dfrac{x^2 + 2xy}{x^2 + y^2}$ C) $-\dfrac{x^2 + 2xy}{x^2 + y^2}$ D) $\dfrac{x^2 + 3xy}{x^2 + y^2}$

Find the derivative.

22) $y = e^{(8\sqrt{x} + x^3)}$ 22) _____

A) $\left(\dfrac{4}{\sqrt{x}} + 3x^2\right) e^{(8\sqrt{x} + x^3)}$ B) $(8\sqrt{x + 3x^2})\ e^{(8\sqrt{x} + x^3)}$

C) $(8\sqrt{x + 3x^2}) \ln (8\sqrt{x + x^3})$ D) $e^{(4\sqrt{x} + 3x^2)}$

23) $f(x) = (\ln x)^6$ 23) _____

A) $\dfrac{6 (\ln x)^5}{x}$ B) $\dfrac{1}{(\ln x)^6}$ C) $6 (\ln x)^5$ D) $\dfrac{1}{x^6}$

24) $y = e^{x^3} \ln x$ 24) _____

A) $\dfrac{e^{x^3} + 3x^3 e^{x^3} \ln x}{x}$ B) $\dfrac{e^{x^3} + 3e^{x^3} \ln x}{x}$

C) $\dfrac{e^{x^3} + 3x^2 e^{x^3} \ln x}{x}$ D) $\dfrac{3x^3 e^{x^3} + 1}{x}$

Solve the problem.

25) The number of employees of a company, N(t), who have heard a rumor t days after the rumor is started is given by the logistic equation 25) _____

$$N(t) = \frac{345}{1 + 55.8e^{-0.2t}}.$$

How many employees have heard the rumor 10 days after it is started?

A) 40 employees B) 32 employees C) 36 employees D) 7 employees

26) Find the doubling time for an amount invested at a growth rate 4% per year compounded continuously. 26) _____

A) 2.8 years B) 17.3 years C) 15 years D) 7.4 years

27) An amount is invested at a certain growth rate, k, per year compounded continuously. The doubling time is 7 years. What is the growth rate k? 27) _____

A) 9.9% B) 4.85% C) 7.39% D) 11.43%

28) Ben Franklin bequeathed $4000.00 to the city of Boston in 1790. Assuming the fund grew to $4 million in 200 years, find the interest rate compounded continuously that would yield this total value. 28) _____

A) 2.6% B) 3.5% C) 1.7% D) 5.7%

Find the derivative.

29) $y = 5xe^x - 5e^x$ 29) _____

A) $5xe^x + 10e^x$ B) $5x$ C) $5e^x$ D) $5xe^x$

Differentiate.

30) $y = 2^{x-1}$ 30) _____

A) $2^{x-1} \ln x$ B) $2^{x-1} \ln 2$ C) $2 \ln 2$ D) $2^{x-1} \ln 2^{x-1}$

31) $f(x) = x^5 6^x$ 31) _____

A) $5(\ln 6)\, x^4 6^x$ B) $5x^4 6^x + (\ln x)x^5 6^x$

C) $5x^4 6^x + (\ln 6)x^5 6^x$ D) $5x^4 6^x + x^5 6^x$

Find the derivative.

32) $y = \dfrac{e^x}{\ln x}$ 32) _____

A) $\dfrac{e^x - x\,e^x \ln x}{x \ln^2 x}$ B) $\dfrac{e^x + x\,e^x \ln x}{x}$ C) $x\,e^x$ D) $\dfrac{x\,e^x \ln x - e^x}{x \ln^2 x}$

Differentiate.

33) $y = \log_5(6x)$ 33) _____

A) $\dfrac{\ln 5}{x}$ B) $\dfrac{6}{x \ln 5}$ C) $\dfrac{1}{x \ln 5}$ D) $\dfrac{1}{x}$

Solve the problem.

34) In one city, 33% of all aluminum cans distributed will be recycled each year. A juice company distributes 209,000 cans. The number still in use after time t, in years, is given by 34) _____

$$N(t) = 209{,}000\,(0.33)^t.$$

Find N'(t).

A) $N'(t) = 209{,}000\,(\ln t)(0.33)^t$ B) $N'(t) = 209{,}000\,t(0.33)^{t-1}$

C) $N'(t) = 209{,}000\,(\ln 0.33)(0.33)^t$ D) $N'(t) = 209{,}000\,(0.33)^t$

Differentiate.

35) $y = (x + 3)^x$ 35) _____

A) $\ln(x + 3) + \dfrac{x}{x + 3}$ B) $x \ln(x + 3)$

C) $(x + 3)^x\left(\ln(x + 3) + \dfrac{x}{x + 3}\right)$ D) $x + 3)^{x-1}$

36) $y = x^{\ln x}$ 36) _____

A) $(\ln x)^2$ B) $2x^{\ln x - 1} \ln x$ C) $x^{\ln x - 1} \ln x$ D) $\dfrac{2 \ln x}{x}$

Find the elasticity of the demand function at the given price and state whether the demand is elastic, inelastic, or whether it has unit elasticity.

37) $q = D(p) = \frac{300}{(p+8)^2}$; \$7 37) _____

A) -8; inelastic B) $\frac{15}{14}$; inelastic C) $\frac{14}{15}$; inelastic D) $\frac{15}{7}$; elastic

Solve the problem.

38) The magnitude R (measured on the Richter scale) of an earthquake of intensity I is defined as 38) _____

$$R = \log \frac{I}{I_0}.$$

where I_0 is a minimum intensity used for comparison. What is the magnitude on the Richter scale of an earthquake whose intensity, I, is $10^{4.9}\ I_0$?

A) 0.7 B) $4.9\ I_0$ C) 4.9 D) 11.3

For the given demand function, find the value(s) of p for which total revenue is maximized.

39) $x = D(p) = 800e^{-0.11p}$ 39) _____

A) 0.11 B) There is no maximum.

C) 800 D) $\frac{100}{11}$

Solve the problem.

40) Find the present value of \$30,000 due 19 years later at 6.1%, compounded continuously. 40) _____

A) \$8896.23 B) \$9413.99 C) \$188,679.25 D) \$95,602.35

Evaluate.

41) $\int (10t^2 + 5t - 5)\,dt$ 41) _____

A) $\frac{10}{3}t^3 + \frac{5}{2}t^2 - 5t + C$ B) $10t^3 + 5t^2 - 5t + C$

C) $5t^3 + 5t^2 - 5t + C$ D) $20t + 5 + C$

42) $\int \frac{27}{x^2}\,dx$ 42) _____

A) $27x + C$ B) $\frac{27}{x} + C$ C) $-\frac{27}{x} + C$ D) $-27x + C$

Find f such that the given conditions are satisfied.

43) $f'(x) = 5x^2 - 7x + 4,\ f(0) = 2$ 43) _____

A) $f(x) = \frac{5}{3}x^3 - \frac{7}{2}x^2 + 4x - 2$ B) $f(x) = \frac{5}{3}x^3 + \frac{7}{2}x^2 + 4x + 2$

C) $f(x) = \frac{5}{3}x^3 - \frac{7}{2}x^2 + 4x + 2$ D) $f(x) = \frac{5}{3}x^3 - \frac{7}{2}x^2 + 4x - 4$

Find the elasticity of the demand function as a function of p.

44) $x = D(p) = \sqrt{700 - p}$ 44) _____

A) $E(p) = \frac{1}{1400 - 2p}$

B) $E(p) = \frac{p}{1400 - 2p}$

C) $E(p) = \frac{p}{\sqrt{700 - p}}$

D) $E(p) = \frac{p}{2p - 1400}$

Find the elasticity of the demand function at the given price and state whether the demand is elastic, inelastic, or whether it has unit elasticity.

45) $q = D(p) = 700e^{-0.03p}$; \$16 45) _____

A) 0.03; inelastic

B) 0.48; inelastic

C) 1; unit elasticity

D) $\frac{1600}{3}$; elastic

Evaluate.

46) $\int \frac{28x}{\sqrt{x}}\, dx$ 46) _____

A) $\frac{14}{3}x^{1/2} + C$

B) $\frac{28}{3}x^{3/2} + C$

C) $\frac{28}{3}x^{1/2} + C$

D) $\frac{56}{3}x^{3/2} + C$

Solve the problem.

47) Find a company's cost function if its marginal cost function is $C'(x) = 5x^2 - 7x + 4$ and $C(6) = 260$. 47) _____

A) $C(x) = \frac{5}{3}x^3 - \frac{7}{2}x^2 + 4x - 260$

B) $C(x) = \frac{5}{3}x^3 - \frac{7}{2}x^2 + 4x + 2$

C) $C(x) = \frac{5}{3}x^3 - \frac{7}{2}x^2 + 4x - 2$

D) $C(x) = \frac{5}{3}x^3 - \frac{7}{2}x^2 + 4x + 260$

48) A company finds that its marginal revenue from the sale of the xth unit of its product is given by $R'(x) = 4x^2 - 6$. Assuming that $R(0) = 0$, find the total-revenue function R. 48) _____

A) $R(x) = \frac{4}{3}x^3 - 6x$

B) $R(x) = 2x^3 - 6x^2$

C) $R(x) = \frac{4}{3}x^3 - 3x$

D) $R(x) = 8x$

Find the indicated tangent line.

49) Find the tangent line to the graph of $f(x) = 3e^{4x}$ at the point (0, 3). 49) _____

A) $y = 12x + 3$

B) $y = 3x + 3$

C) $y = 4x + 3$

D) $y = -12x + 3$

Evaluate using the substitution method.

50) $\int \frac{8}{(y - 9)^3}\, dy$ 50) _____

A) $\frac{2}{(y - 9)^4} + C$

B) $-\frac{2}{(y - 9)^4} + C$

C) $-\frac{4}{(y - 9)^2} + C$

D) $\frac{4}{(y - 9)^2} + C$

51) $\int te^{-7t^2}\,dt$ 51) _____

A) $-\frac{1}{14}e^{-7t^2}+C$ B) $\frac{1}{7}e^{-7t^2}+C$ C) $-\frac{1}{7}e^{-7t^2}+C$ D) $\frac{1}{14}e^{-7t^2}+C$

52) $\int \frac{\ln 9x}{x}\,dx$ 52) _____

A) $\frac{(\ln 9x)^2}{18}+C$ B) $\frac{(\ln 9x)^2}{2}+C$ C) $(\ln 9x)^2+C$ D) $\frac{(\ln 9x)^2}{9}+C$

53) $\int \frac{x\,dx}{(7x^2+3)^5}$ 53) _____

A) $-\frac{1}{56}(7x^2+3)^{-4}+C$ B) $-\frac{7}{3}(7x^2+3)^{-6}+C$

C) $-\frac{7}{3}(7x^2+3)^{-4}+C$ D) $-\frac{1}{14}(7x^2+3)^{-6}+C$

Evaluate the indefinite integral.

54) $\int (x-4)^2x^2\,dx$ 54) _____

A) $\frac{x^5}{4}-\frac{8}{3}x^4+8x^3+C$ B) $x^5-8x^4+16x^3+C$

C) $4x^3-2x^4+\frac{16}{3}x^2+C$ D) $\frac{x^5}{5}-2x^4+\frac{16}{3}x^3+C$

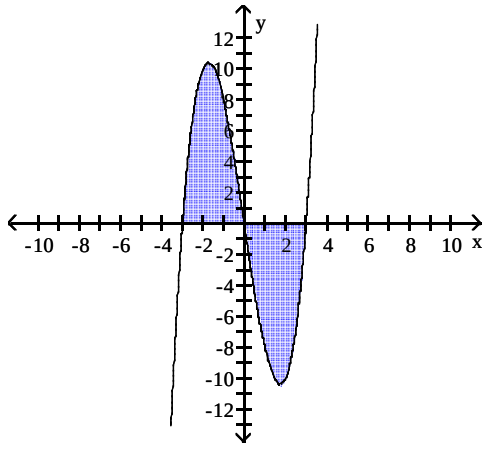
55) $\int \frac{x^4-9x+7}{x^2}\,dx$ 55) _____

A) $\frac{x^3}{3}-\frac{9}{2}x^2-\frac{7}{x}+C$ B) $\frac{x^3}{3}-9\ln|x|-\frac{7}{x}+C$

C) $x^3-9\ln|x|+\frac{7}{x}+C$ D) $\frac{x^3}{3}+\frac{9}{x^2}-\frac{14}{x^3}+C$

Evaluate the definite integral and interpret the result.

56) $\int_{-3}^{3} (x^3 - 9x)\,dx$ 56) _____



A) 81; the shaded area above the x-axis minus the shaded area below the x-axis equals 81.
B) 0; the shaded area above the x-axis is equal to the shaded area below the x-axis.
C) 9; the shaded area above the x-axis minus the shaded area below the x-axis equals 9.
D) 81; the shaded area above the x-axis plus the shaded area below the x-axis equals 81.

Evaluate.

57) $\int_{1}^{4} \frac{t^2 + 1}{\sqrt{t}}\,dt$ 57) _____

A) 32 B) $\frac{77}{5}$ C) $\frac{72}{5}$ D) $\frac{92}{5}$

Solve the problem.

58) A company estimates that its sales will grow continuously at a rate given by the function 58) _____

$S'(t) = 15e^t$,

where S'(t) is the rate at which sales are increasing, in dollars per day, on day t. Find the sales from the 2nd day through the 6th day. (This is the integral from 1 to 6.)

A) \$6010.66 B) \$3630.86 C) \$6051.43 D) \$400.71

Find the area bounded by the given curves.

59) $y = \frac{1}{2}x^2$, $y = -x^2 + 6$ 59) _____

A) 4 B) 8 C) 16 D) 32

Find the average value over the given interval.

60) $y = x^2 - 6x + 4$; [0, 2] 60) _____

A) $\frac{10}{3}$ B) – 1 C) –4 D) $-\frac{2}{3}$

Evaluate using the substitution method.

61) $\int \frac{e^x\,dx}{e^x + e}$ 61) _____

A) $\ln|e^x + e| + C$ B) $e \ln|e^x + e| + C$ C) $\frac{x}{e} + C$ D) $x + C$

62) $\int \frac{6x^5 dx}{(10 + x^6)^3}$ 62) _____

A) $-\frac{6x^5}{(10 + x^6)^2} + C$ B) $-\frac{1}{2(10 + x^6)^2} + C$

C) $-\frac{1}{4(10 + x^6)^4} + C$ D) $\frac{1}{4}(10 + x^6)^4 + C$

63) $\int 5e^{3x}\,dx$ 63) _____

A) $\frac{5}{3}e^{3x} + C$ B) $\frac{1}{3}e^{3x} + C$

C) $5e^{3x} + C$ D) $\frac{5}{3x + 1}e^{3x + 1} + C$

Evaluate.

64) $\int_1^2 x(x^2 + 1)^4\,dx$ 64) _____

A) $\frac{3093}{5}$ B) $\frac{609}{10}$ C) 3093 D) $\frac{3093}{10}$

Solve the problem.

65) The rate of expenditure on a particular machine is given by $M'(x) = 15x\sqrt{x^2 + 5}$, where x is time measured in years. Maintenance costs through the second year are $ 134. Find the total maintenance function. 65) _____

A) $M(x) = 15(x^2 + 5)^{3/2} + 119$ B) $M(x) = 5(x^2 + 5)^{3/2} - 1$

C) $M(x) = 5(x^2 + 5)^{3/2} + 119$ D) $M(x) = 15(x^2 + 5)^{3/2} - 1$

Evaluate.

66) $\int \frac{x^3}{e^{x^4}}\,dx$ 66) _____

A) $-\frac{1}{4e^{x^4}} + C$ B) $-\frac{1}{4e^{x^4 - 1}} + C$ C) $\frac{1}{e^{x^4}} + C$ D) $\frac{3x^2}{e^{x^4}} + C$

Evaluate using integration by parts.

67) $\int e^{2x} x^2 \, dx$ 67) _____

A) $\frac{1}{2}x^2e^{2x} - \frac{1}{2}xe^{2x} + C$

B) $\frac{1}{2}x^2e^{2x} - \frac{1}{4}xe^{2x} + \frac{1}{4}e^{2x} + C$

C) $\frac{1}{2}x^2e^{2x} - xe^{2x} + \frac{1}{4}e^{2x} + C$

D) $\frac{1}{2}x^2e^{2x} - \frac{1}{2}xe^{2x} + \frac{1}{4}e^{2x} + C$

68) $\int 5x \ln x \, dx$ 68) _____

A) $\frac{5}{2}x \ln x - \frac{5}{4}x + C$

B) $\frac{5}{2}x^2 \ln x - \frac{x^2}{4} + C$

C) $\frac{5}{2}x^2 \ln x - \frac{5}{4}x^2 + C$

D) $\frac{x^2}{2} \ln x - \frac{x^2}{4} + C$

Find the integral.

69) $\int_1^3 \ln 4x \, dx$ 69) _____

A) 11.1 B) 4.07 C) 8.07 D) −1.93

Evaluate.

70) $\int_0^1 (x + 4)^3 \, dx$ 70) _____

A) 27 B) 369 C) $\frac{369}{4}$ D) $\frac{625}{4}$

Answer Key
Testname: PRACTICE FOR THE FINAL EXAM

1) A
2) C
3) C
4) D
5) B
6) D
7) C
8) B
9) D
10) D
11) A
12) C
13) B
14) B
15) A
16) D
17) D
18) A
19) B
20) C
21) C
22) A
23) A
24) A
25) A
26) B
27) A
28) B
29) D
30) B
31) C
32) D
33) C
34) C
35) C
36) B
37) C
38) C
39) D
40) B
41) A
42) C
43) C
44) B
45) B
46) D
47) B
48) A
49) A
50) C

51) A
52) B
53) A
54) D
55) B
56) B
57) C
58) A
59) C
60) D
61) A
62) B
63) A
64) D
65) B
66) A
67) D
68) C
69) B
70) C