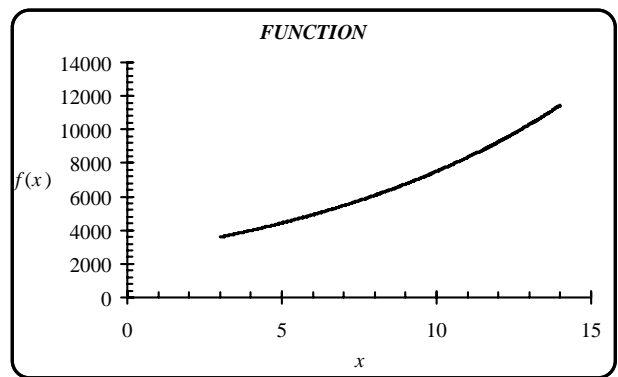
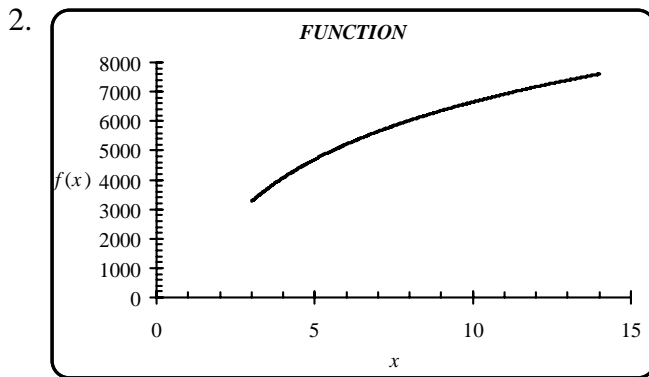
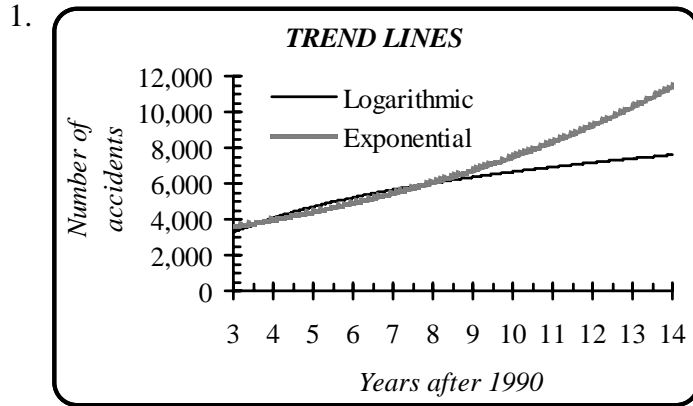


Business Mathematics II

ANSWERS FOR FINAL EXAM STUDY GUIDE



3. 7,166 injury automobile accidents
4. 9,263 injury automobile accidents
5. 154 injury automobile accidents
6. 2,906 injury automobile accidents
7. The exponential estimate is quite reasonable. The logarithmic estimate is too low to be reasonable.
8. 508,378
9. We would not put much faith in the 2040 prediction, since there will have been a great many changes in the world by that time.

10. The 2002 prediction would be a useful tool in traffic planning. It is quite likely that conditions similar to those in the past several years will continue for the next few years.
11. The exponential model seems to be a better choice. It fits the data points better than the logarithmic model. This is particularly true for the first and last years in the data. The predicted growth from the exponential model also seems to be more likely than the very small growth in accidents which is predicted by the logarithmic model.
12. (a) \$63.40
(b) yes
(c) -\$4,662.60
(d) The prediction in Part (c) should not be used in future planning.
13. (a) \$2.85
(b) \$4.77
(c) The prediction in Part (a)
14. (a) 2,802 students
(b) 2,624 students
(c) 11,638 students
(c) Number of admissions is growing much more rapidly than the number of students who graduate.
(d) 147,130 students; No
15. (a) \$80
(b) 400
(c) \$200
(d) $R(q) = 200 \cdot q - 0.2 \cdot q^2$; \$48,000
(e) $C(q) = 20,000 + 50 \cdot q$; \$50,000
(f) 300
(g) $P(q) = -0.2 \cdot q^2 + 150 \cdot q - 20,000$; \$5,000
(h) 375
(i) \$125; \$8,125
(j) \$80/unit
(k) \$14,062.50; Yes
16. (a) \$299
(b) \$149,500
(c) $\int_0^{500} -0.0006 \cdot q^2 - 0.002 \cdot q + 450 \, dq - 149,500$
(d) \$87,500
(e) \$62,000

17. (a) 1,000
 (b) \$100,000
 (c) 900
 (d) \$50,000

18. (a) 200
 (b) \$12,000
 (c) $\int_0^{60} -0.0005 \cdot q^2 + 80 dq - 12,000$

19. (a) 125
 (b) 146
 (c) \$6.70
 (d) \$145

20. (a) $C(q) = 100,000 + 180 \cdot q$
 (b) \$370,000
 (c) 975

21. (a) 400

(b)

Definition	Computation		Plot Interval		Integration Interval		$\int_a^b f(x) dx$
Formula for $f(x)$	x	$f(x)$	A	B	a	b	
			0	400	0	400	

Formula for $f(x)$: $=-0.0005 \cdot x^2 + 80$

22. (a) \$15,000
 (b) \$5,000
 (c) \$25,000
 (d) \$5,000

23. (a) [100, 1000]
 (b) [0, 550]

24. (a) \$82
 (b) \$24,600
 (c) $\int_0^{300} -0.0002 \cdot q^2 + 100 dq - 24,600$
 (d) \$16,000
 (e) \$8,600

25. (a) 11, 36
(b) \$240
(c) 26
(d) \$280
(e) \$790

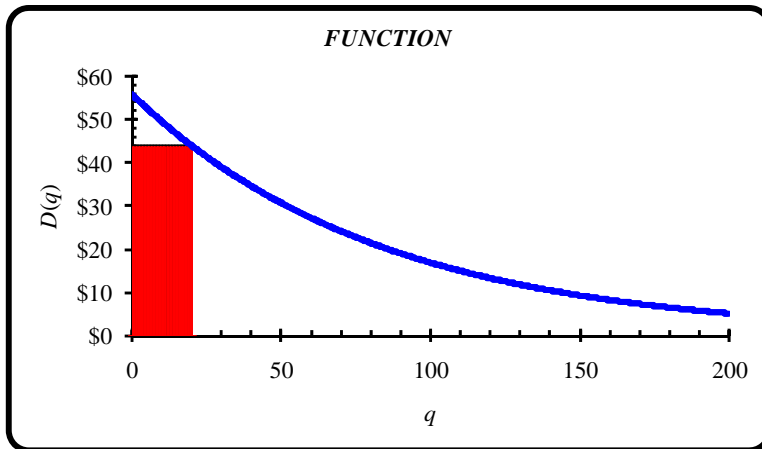
26. (a) (700, 3100)
(b) (25, 2000)
(c) 25 and 2000
(d) 2000

27. (a) \$30.73

(b) $\int_{50}^{200} 56 \cdot e^{-0.012 \cdot q} dq$

- (c) 28

- (d)



28. (a) $C(q) = 11,000 + 5 \cdot q$
(b) $MC(q) = 5$
(c) 7,250

29. (i) C
(ii) D
(iii) A, G

30.

Definition

Formula for $f(x)$

Computation

x	$f(x)$

Plot Interval

a	b
0	1500

Constants

s	
t	
u	
v	
w	

Formula for $f(x)$: IF($x \leq 700, 25000 + 130 * x, 116000 + 95 * x$)

31. B

32. D

33. B

34. (a) 2
 (b) 4
 (c) 1
 (d) 80

35. (a) Increasing
 (b) Decreasing
 (c) 2,000
 (d) 1,400

36. (a) Increasing
 (b) 200
 (c) Decreasing
 (d) 100

37. (a) Increasing
 (b) Increasing
 (c) Decreasing
 (d) 120
 (e) 60

38. (a) Increasing
 (b) Increasing
 (c) Decreasing
 (d) Increasing
 (e) Increasing
 (f) 450
 (g) 475

39. - \$20

40. (a) Increasing
(b) Increasing
(c) Decreasing
(d) 1,250
(e) 625

41. \$116.80

42. -\$300; \$290

43. (a) 80,000
(b) 90,500

44. -1

45. (a) 0.2
(b) $y = 0.2 \cdot x + 3.2$
(c) -0.4

46. (a) -0.068
(b) $y = -0.068 \cdot x + 2.579$

47. (a) 2.053
(b) $y = 2.053 \cdot x - 4.148$
(c) 1.026

48. It is a straight line, with a slope of m .

49. (a) -5
(b) 4
(c) -4
(d) -24

50. (a) 0.49
(b) $y = 0.49 \cdot x - 4.082$
(c) -0.588

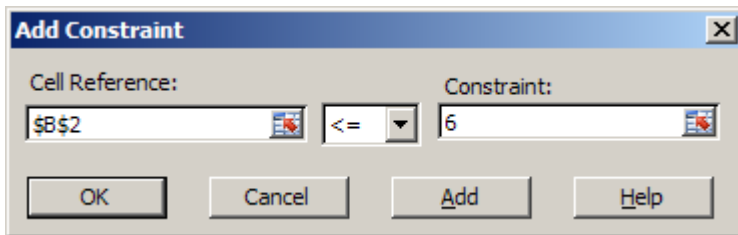
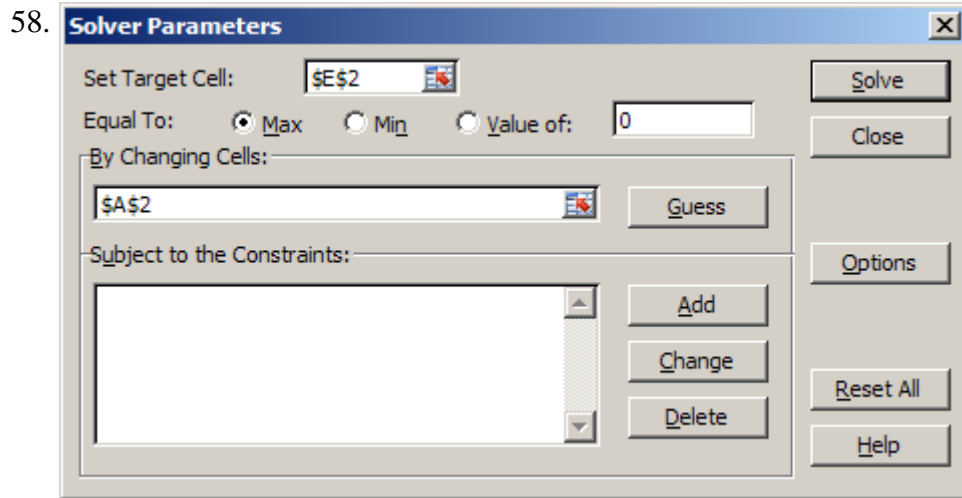
51. C

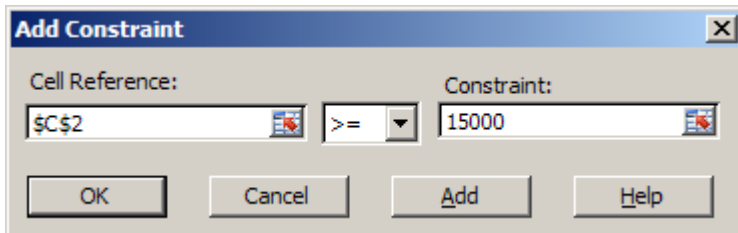
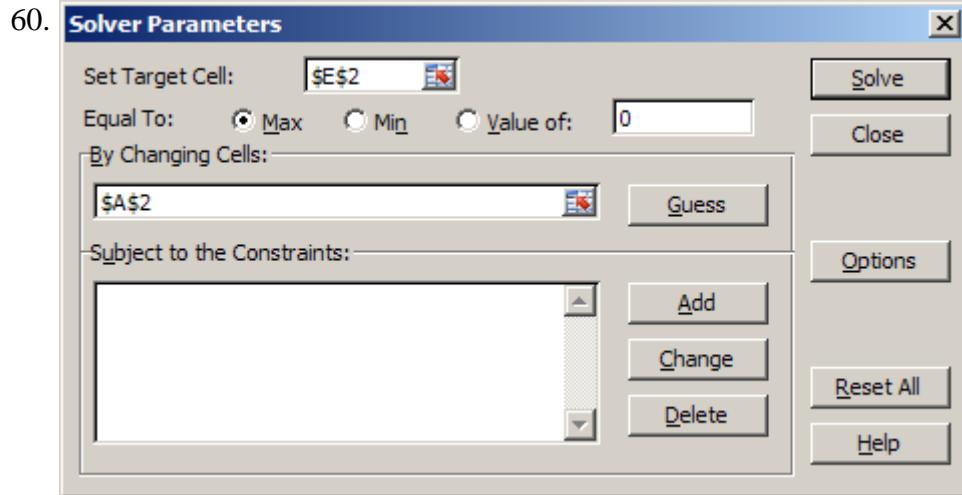
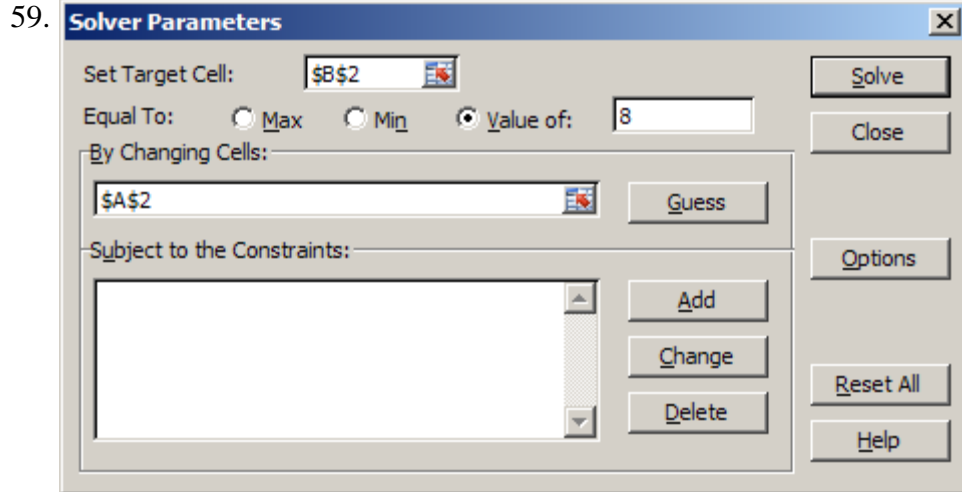
52. C

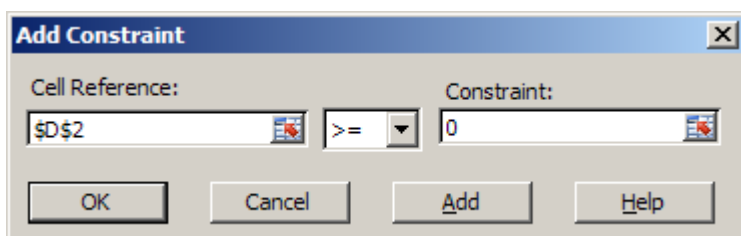
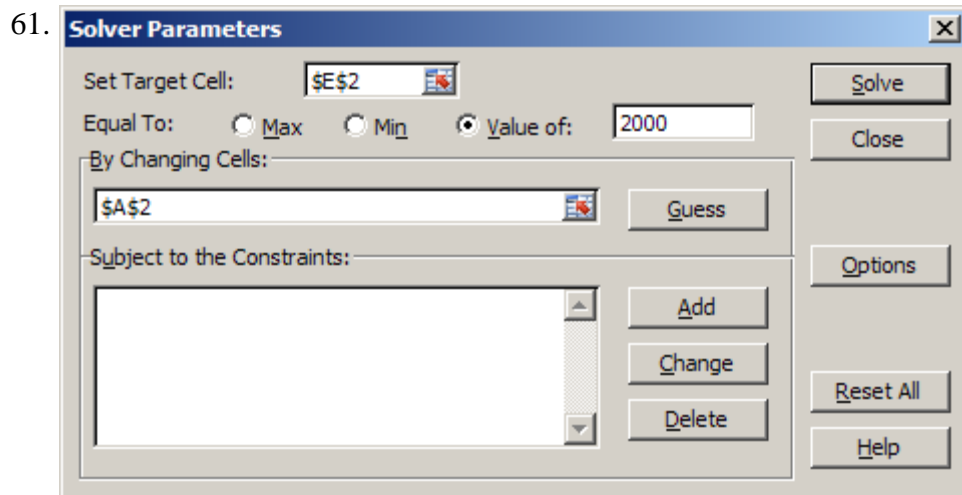
53. B

54. D

55. (a) \$130
(b) $y = 130 \cdot t - 540$
(c) \$760
56. (a) \$113,000
(b) \$165
57. (a) The price per watch at which 200 watches can be sold is \$26.95.
(b) When 200 watches are sold, the price per watch at which one more watch can be sold decreases by \$0.25.







62. (a) $x_0 = 1; x_1 = 4; x_2 = 7; x_3 = 10; x_4 = 13$
 (b) $m_1 = 2.5; m_2 = 5.5; m_3 = 8.5; m_4 = 11.5$
 (c) $S_4(f, [1, 13]) \cong 4.325$
63. (a) $x_0 = -2; x_1 = -1.5; x_2 = -1; x_3 = -0.5; x_4 = 0$
 (b) $m_1 = -1.75; m_2 = -1.25; m_3 = -0.75; m_4 = -0.25$
 (c) $f(m_1) \cong -27.014; f(m_2) \cong 4.209; f(m_3) \cong 12.838; f(m_4) \cong 14.811$
 (d) $S_4(f, [-2, 0]) \cong 2.422$
64. (a) $x_0 = -12; x_1 = -8; x_2 = -4; x_3 = 0; x_4 = 4$
 (b) $m_1 = -10; m_2 = -6; m_3 = -2; m_4 = 2$
 (c) $f(m_1) \cong 19.758; f(m_2) \cong 7.619; f(m_3) \cong 3.778; f(m_4) \cong 2.563$
 (d) $S_4(f, [-12, -4]) \cong 134.867$
65. (a) $x_0 = -2; x_1 = 0; x_2 = 2; x_3 = 4$
 (b) $m_1 = -1; m_2 = 1; m_3 = 3$
 (c) $f(m_1) \cong -0.333; f(m_2) = 0.5; f(m_3) = 2.375$
 (d) $S_3(f, [-2, 4]) \cong 5.083$

66. (a) $x_0 = -4; x_1 = -1; x_2 = 2; x_3 = 5$

(b) $m_1 = -2.5; m_2 = 0.5; m_3 = 3.5$

(c) $S_3(f, [-4, 5]) = 73.125$

67. (a) 375

(b) \$49.74

(c) \$29,844

(d) \$3,800

(e) \$26,044