Final Exam Review - SOLUTIONS

1. {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}
2. $g(x) = -(x+3)^2$
3. [-3,4)
4. $(-\infty, 1]$
5. $(-4, \infty)$
6. vertical stretch x2, translation left 1
7. translation right 1, and up 5
8. $f^{-1}(x) = \frac{x-3}{2}$
9. $g^{-1}(x) = 4(x+5)$ or $g^{-1}(x) = 4x + 20$
10. 1
11. $-\frac{3}{7}$
12. **a.** $\begin{cases} c = 1.50d + 34.00 \\ c = 2.50d + 26.00 \end{cases}$
    b. 8
13. dependent
14. inconsistent
15. $\begin{cases} a + c = 75 \\ c = 4a \end{cases}$; 15 adults, 60 children
16. (0, 3)
17. (–2, –1)
18. no solutions
19. (–2, –3, –2)
20. (–3, 2, –5)
21. (–3, 6, –2)
22. Let x = the number of vanilla cakes.
    Let y = the number of chocolate cakes.
    $\begin{cases} x \geq 0 \\ y \geq 0 \\ x + y \leq 25 \\ y \leq 10 \end{cases}$
23. maximum value at (7, 0); 28
24. 3 × 2, –3
25. z = –5, x = –3, p = 10 or –10
26. $\begin{bmatrix} 10 & 11 \\ 7 & 0 \end{bmatrix}$
27. $\begin{bmatrix} 8 & -6 & 11 \\ -14 & 5 & 2 \end{bmatrix}$
28. $\begin{bmatrix} -56 & 32 & 0 \\ 24 & 0 & -40 \\ -48 & -16 & -8 \end{bmatrix}$
29. (2, 1), x = 2;
    P'(3, 0), Q'(0, –3)
30. $y = 4x^2 - 4x - 4$
31. $y = -3x^2 - 2x + 4$
32. $26; 1,718 drills
33. 1,000 units; $900
34. 4.23 seconds
35. $5i\sqrt{6}$
36. $7 + 2i$
37. $6 - 5i\sqrt{6}$
38. $\sqrt{29}$
39. $-7 + 4i$
40. $-4 - 9i$
41. $4 + 7i$
42. 12
43. $44 + 12i$
44. 9
45. x = -9, x = -10
46. x = 9, x = 4
47. x = 8, x = -4
48. x = $-\frac{2}{3}$, x = -4
49. x = $\sqrt{3}$, x = $-\sqrt{3}$
50. x = $-\frac{9}{5}$, x = 9
51. x = –2, x = –18
52. x = $-\frac{5}{7}i$, x = $\frac{5}{7}i$
53. $y = (x+3)^2 - 5$
54. $y = -2(x+2)^2 - 3$
55. $y = x^2$
56. $y = |x|$
57. $7x + y = 17$
58. $y = -\frac{2}{5}x + \frac{16}{5}$
59. $y = 2x - 11$
60. $y = 6$
61. x=4

62. $\begin{bmatrix} -182 \\ -41 \end{bmatrix}$
63. $\begin{bmatrix} -52 & 5 \\ -15 & 2 \end{bmatrix}$
64. $\begin{bmatrix} -73 & -38 \\ 11 & -10 \end{bmatrix}$
65. $\begin{bmatrix} 38 \\ 51 \end{bmatrix}$
66. 72
67. 150
68. 5
69. $y = 3(x + 4)^2 + 2$
70. $y = -x^2 - 2$
71. $-5x(2x + 5)$
72. $(x + 7)(x - 9)$
73. $(5x + 9)(x - 4)$
74. J
75. G
76. M
77. B
78. F
79. N
80. K
81. D
82. C
83. A
84. H
85. E