Answer Key (no work shown)

1. a) -15
   b) 80
2. a) 18
   b) 6
   c) -115
   d) 4
   e) 3
   f) 4
3. a) 576
   b) -20312
   c) 1240
   d) -111964
4. a) n = 4, l = -40
   b) a= -5,
      d = 6/11
5. a) d = 7, a= 5,
      S = 236
   b) r = 5, a = -2,
      S = 7812
6. a)
   1) $\sum_{n=1}^{9} 3+(n-1)4$
   2) $\sum_{n=1}^{15}(-5)(3)^{n-1}$
   b) 1) 3 + (-3) + (-9) + (-15) + (-21) + (-27) + (-33) + (-39) + (-45)
      S = -189
   2) -32 + 64 + (-128) + (256)
      S = 160
7. 1) 415/999
   2) 3180/990
8. a) 24
   b) -108/124
9. a) $1000(1.07)^8$
   b) 1) 52,000
   2) $n^2+29n-1000=0$
   c) 1) $\frac{174960}{15625}$
   2) 583.204
   3) 600
10. a) $\pm\sqrt{168}$
    b) 27/2
    c) $\sqrt[5]{5}$
    $6\sqrt[5]{5}, 6\left(\sqrt[5]{5}\right)^2$
    $6\left(\sqrt[5]{5}\right)^3, 6\left(\sqrt[5]{5}\right)^4$
    d) 35/6
    $-3+\frac{35}{6}, -3+2\left(\frac{35}{6}\right),$
    $-3+3\left(\frac{35}{6}\right), -3+4\left(\frac{35}{6}\right)$
    $-3+5\left(\frac{35}{6}\right)$

Matrices

A. 1. $\begin{bmatrix}-4 & 2\\ 4 & 6\end{bmatrix}$

2. $\begin{bmatrix}-12 & 7\\ 1 & 4\end{bmatrix}$

3. $\begin{bmatrix}-25 & -35\\ -35 & -15\end{bmatrix}$

4. $\begin{bmatrix}-9 & 4\\ -34 & 33\end{bmatrix}$

5. $\begin{bmatrix}21 & 19\\ 7 & 9\end{bmatrix}$

6. $\begin{bmatrix}2 & 5\\ -3 & 4\end{bmatrix}$

7. $\begin{bmatrix}\frac{4}{23} & \frac{3}{23}\\ \frac{-5}{23} & \frac{2}{23}\end{bmatrix}$

8. $\begin{bmatrix}-2 & 3\\ -5 & -4\end{bmatrix}$

9. $\begin{bmatrix}\frac{1}{5} & \frac{-4}{5}\\ \frac{2}{5} & \frac{-3}{5}\end{bmatrix}$

11. -7

b. 1. $\begin{bmatrix}-2 & 5 & -3\\ 5 & 4 & 4\\ 1 & 17 & 2\end{bmatrix}$

2. $\begin{bmatrix}4 & 2\\ 12 & 27\end{bmatrix}$

c. 1. x = 3, y= 3/4

2. $\begin{bmatrix}\frac{-19}{5} & \frac{4}{5}\\ \frac{-13}{5} & \frac{-2}{5}\end{bmatrix}$

3. x = -2, y = -1

Exponents:

1. $x^7 y^6$
2. $\frac{5^4 x^8}{y^{12}}$
3. $\frac{5x^3}{y^3}$
4. $3^{\frac{7}{6}} x^{\frac{13}{6}} y^{\frac{25}{6}}$
5. $2^{\frac{1}{12}} x^{\frac{22}{12}} y^{\frac{8}{12}}$
6. 5^{10x-3}
7. $5 - 3^{\frac{1}{3}}$
8. $5^{4i} - 4 \cdot 5^{21} + 4$
9. 25

1. -1
2. -11/4
3. log 17/log5
4. $\frac{\log 2.7142}{3\log 5}$
5. $\frac{10 \pm \sqrt{92}}{2}$
6. -10/4

1. log35 + xlog7
   = (1/2)log17
2. xlog3 +
   (1/7)log5 =
   5logx
3. (x-1)logx =
   (2x - 3)log5

1. 2187
2. 1.1697
3. 1.7713
4. 5, -1
5. 4, -4
6. 6.2402
7. 17
8. 2.7605

1. 12.927
2. 98.54
3. 19.34

1. a) a) 7
      b) 1
      c) 45
      d) 2 real
      e) $\frac{7 \pm 3\sqrt{5}}{2}$
   b) a) 3/5
      b) -11/5
      c) 229
      d) 2 real
      e) $\frac{-3 \pm \sqrt{229}}{-10}$
2. a) 25, 4
   b) 2.08i, -208i,
      1.61. - 1.61
4. a) $x^2 - 2x - 15 = 0$
   b) $x^2 - 6x + 34 = 0$

5. a)
   $\{-3 \le x \le 1 \cup x \ge 4\}$
   b) $\{-1 \le x \le 4/3\}$

Complex

1. i
2. 1
3. -1
4. 5^{-8-i}
5. -41+i
6. 9
7. -10 + 25i
8. $\frac{4 - 19i}{-29}$

B. 1. $\frac{8 - 9i}{10}$
   2. -7i/3
   3. $\frac{-49 + 8i}{29}$
4. y = -16/7
   x = 66/14

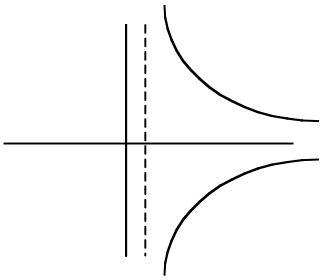
Functions

a) 1. 1
   2. 4
   3. -6
   4. -2, 3, 1
   5. (x + 2) = 1
      (x - 3) = 1
      (x - 1) = 2

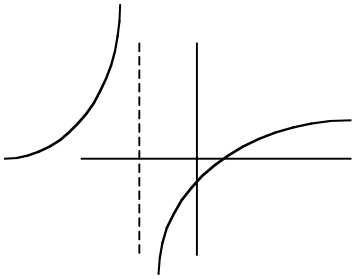
6. u.l - u r.
7. 1 hill, 2 valleys
8. 3
9. 2 pos, 1 neg
10. none

b) 1. 1
2. 4
3. -8
4. -1, 2
5. (x + 1) = 2
   (x - 2) = 3
6. l.l. - u. r.
7. 1 hill, 1 valley
8. 2
9. 1 pos., 1 neg
10. none

2. 1. 17.5
2. -3, -2, 1, 3
3. (x + 3) = 1
   (x + 2) = 1
   (x - 1) = 1
   (x - 3) = 1
4. u.l. - u. r
5. (x + 3)(x + 2)
   (x - 1)(x -3)
6. (x + 3)(x + 2)
   (x - 1)(x -3) = 0
7. 4
8. 2 hills, 1 valley
9. 3
10. 2 pos, 2 neg



3. 1 7/2
2. -7/5
3. -5



4. a) I: 3x = 2y - 1
R:
y = 3/(2x - 1)

b) I:
x = (y - 5)/(y + 3)
R:
y = (x + 3)/(x - 5)

2.