1. n >= 10
2. 1 1 1 2
   -2 3 1 7
   2 7 4 13

   1 1 1 2
   0 5 3 11
   0 5 2 9

   1 1 1 2
   0 0 1 2
   0 5 2 9

   1 1 1 2
   0 0 1 2
   0 5 0 5

   1 1 1 2
   0 0 1 2
   0 1 0 1

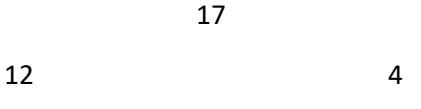
   1 0 1 1
   0 0 1 2
   0 1 0 1

   1 0 0 -1
   0 0 1 2
   0 1 0 1

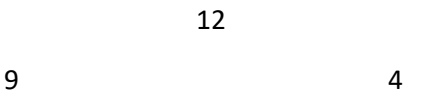
   x1 = -1
   x2 = 1
   x3 = 2

3.

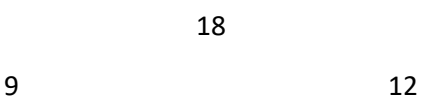
3a



3b



3c



4. d
   a. Binary Search Tree
   b. Heap, Binary Search Tree, AVL
   c. AVL
   d. Heap, AVL
   e. Binary Search Tree, AVL
   f. Binary Search Tree, AVL

5.
   a. x = 2y
      y >= 3,000,000 per day
      x <= 6,400,000
      maximize 1.9x + 1.5y
      x = 6,400,000 gallons of gasoline
      y = 3,200,000 gallons of fuel
   b. x + y <= 5
      8x + 12y >= 24
      12x + 12y >= 36
      2x + y >= 4
      minimize 0.2x + 0.3y
      x = 3
      y = 0