8.2-1 Homework Solutions

1) a) \(\{B, B\}\) b) \([-1, -1, 3, -3, 5, -5, 15, -15\}\) c) \(\{B, B\}\)
   d) \(\{-1, 0, 1, 2, 3, 3\}\) (the set of all numbers reachable by adding one number from each set)
   e) \(\emptyset\) (there are no natural numbers that are \(\leq -4\) and \(\geq 4\))

3) a) \(\{B, B\}\) b) \(\emptyset, \{1\}, \{2\}, \{1, 2\}\) c) The 12 subsets not listed in a)
   d) The 12 subsets not listed in b) e) \(\{1\}, \{2\}, \{3\}, \{1, 2\}, \{1, 3\}, \{2, 3\}\)
   f) \(\emptyset, \{1\}, \{2\}\)

7) a) True  b) True (\(\emptyset\) is a subset of every set)  c) False  d) True
   e) \(\{B, B\}\)  f) False  g) True  h) \(\{B, B\}\)  i) True

10) a) \(\emptyset\) has 0 elements, \(P(\emptyset) = \emptyset\emptyset\) has 2^0 = 1 element.
    \(P(P(\emptyset)) = \emptyset\emptyset\emptyset\emptyset\emptyset\) has 2^2 = 4 elements.
    b) \(P(A)\) has 2 elements and \(P(P(A))\) has 2^2 = 4 elements.

11) \(\{B, B\}\)