1) \(10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 = \frac{10!}{3!} = 604,800\)

2) The 3 upward moves can be made at any 3 of the 7 possible steps, so the answer is the number of ways three numbers can be chosen from the set \(\{1, 2, \ldots, 7\}\), which is \(\binom{7}{3} = 35\).

3) To get from A to the circled point, 2 upward moves can be made at any 2 of the 4 possible steps, so there are \(\binom{4}{2} = 6\) paths from A to the circled point. To get from the circled point to B, 1 upward move can be made at any of 3 possible steps, so there are \(\binom{3}{1} = 3\) paths from the circled point to B. Using the basic principle of counting, altogether there are \(6 \cdot 3 = 18\) valid paths.

4) \(52!/13!4 = 5.36 \times 10^{28}\) (applying the result indicated in the box on p. 10 of Ross)

5) \(4^8 = 65,536\)

6) \(8!/2!^4 = 2520\) (applying the result indicated in the box on p. 10 of Ross)