Name: _____

Directions: Show all work. You may leave your answer in terms of factorials, falling factorials, and binomial coefficients. Any sums or products should be as simple as possible.

1. **[5 parts, 2 points each]** A fair 6-sided die is rolled 3 times.

   (a) Give the sample space Σ.

   (b) What is the probability that all 3 rolls give the same value?

   (c) What is the probability that all 3 rolls give distinct values?

   (d) What is the probability that among the 3 rolls, one of the values is distinct and the other two are equal?

   (e) What is the probability that at least 1 of the rolls is a 4?