

Home Work Assignments (due November 2))

Exercise 1. (see notes # 3) Let D_n be the number of ways that an n -gon can be triangulated by non-intersecting diagonals. Show that

$$D_n = D_1D_{n-1} + D_2D_{n-2} + \cdots + D_{n-2}D_2 + D_{n-1}D_1.$$

Exercise 2. (see notes # 3) Write down the multiplication scheme for (a) a_1, a_2 and a_3 ; (b) a_1, a_2, a_3 and a_4 .

Exercise 3. p.317 #1.

Exercise 4. p.317 #2.

Exercise 5. Verify the formula:

$$n! = (n-1)((n-2)! + (n-1)!), \quad n \geq 2.$$

Exercise 6. The numbers d_n satisfy the following recursive formula:

$$d_n = (n-1)(d_{n-2} + d_{n-1}), \quad n \geq 3.$$

This is useful as an alternative in computation.

Exercise 7. Seven gentlemen check their hats at a party. How many different ways can their hats be returned so that

- (a) no gentlemen receives his own hat?
- (b) at least one gentlemen receives his own hat?
- (b) at least two gentlemen receive their own hat?