

MAT 375-1
HOMEWORK ASG. #10
HAND IN TUESDAY, NOVEMBER 29

1. Find (by hand, using “common expansions”) the coefficient of x^9 in $(1+x^3)(1+x)^{10}$
2. Find (by hand, using “common expansions”) the coefficient of x^9 in $\frac{1+x^3}{(1-x)^{10}}$

For each of the next three problems, construct an appropriate generating function, and calculate the desired coefficient without the aid of Maple’s “expand” command.

3. Exercise Set 6.2 #20
4. Exercise Set 6.2 #22
5. Exercise Set 6.2 #24

For problems #6-9, construct an appropriate exponential generating function, and calculate the desired coefficient without the aid of Maple’s “expand” command.

6. Use an exponential generating function to find the number of 8-letter sequences formed from A’s, B’s and C’s that contain at least one A.
7. Exercise Set 6.4 #6
8. Use an exponential generating function to find the number of ways to distribute n different objects into 5 different boxes so that there is an even number of objects in box #5.
9. Use an exponential generating function to find the number of ways to make a single stack of n poker chips (of three possible colors—red, white or blue) that contains an odd number of red chips and at least one blue chip.