

TAKING COEFFICIENTS IN GENERATING FUNCTIONS

FEBRUARY 21, 2008

Use the formulas from the handout entitled “Examples of generating functions” and the techniques we learned in class to find the coefficients in the following generating functions.

- (1) coefficient of q^{14} in $2q^2/(1-q)^5$
- (2) coefficient of q^{20} in $(1-12q^{11}+11q^{12})/(1-q)^5$
- (3) coefficient of q^{50} in $(1-q^{21})(1-q^{36})(1-q^{34})/(1-q)^3$
- (4) coefficient of q^8 in $(1+q+2q^2)/(1-q)^2$
- (5) coefficient of q^8 in $1/(1-q-q^2)$
- (6) coefficient of q^{27} in $1/(1+2q)^3$
- (7) coefficient of q^{10} in $(1+q)/(1-q-q^2)$
- (8) coefficient of q^{15} in $(1-q^7)(1-q^3)/(1-q)^2$
- (9) coefficient of q^{12} in $(1+3q)/(1-q-q^2)$
- (10) coefficient of q^6 in $1/((1-2q)(1-q^3))$
- (11) coefficient of q^{20} in $1/((1-3q)(1-5q))$
- (12) coefficient of q^{15} in $1/((1-q)(1-q-q^2))$
- (13) coefficient of q^{15} in $1/((1-3q)(1-q-q^2))$
- (14) coefficient of q^{15} in $1/((1-q)^2(1-q-q^2))$
- (15) coefficient of q^8 in $(1+5q)/(1+q)^3$
- (16) coefficient of q^7 in $(1+q)/(1+q)^3$
- (17) coefficient of q^6 in $(q+q^2)/(1-q)^3$
- (18) coefficient of q^{12} in $(1-q^4)/(1-q)^3$
- (19) coefficient of q^{10} in $(1+q+q^2)/(1-q)^4$
- (20) coefficient of q^{12} in $1/(1-2q-4q^2)$
- (21) coefficient of q^9 in $(1-q)/(1+2q)^3$
- (22) coefficient of q^8 in $(1+q)/(1-q)^5$
- (23) coefficient of q^8 in $-(\ln(1-q))/(1-q)$
- (24) coefficient of q^{10} in $1/((1-3q+q^2)(1-q-q^2))$