Binomial Expansion Worksheet

Expand completely.

1) $(1+2a)^5$

2) $(5b+1)^3$

3) $(2b-1)^3$

4) $(3u+1)^5$

5) $(2y^4-1)^6$

6) $(1+2x^3)^5$

7) $(3x^2-1)^5$

8) $(4n^3+1)^4$

9) $(2y^2-1)^6$

10) $(1+3n^3)^4$

Find each coefficient described.

11) Coefficient of x^{20} in expansion of $(1-2x^4)^7$

12) Coefficient of y^4x^2 in expansion of $(2y-3x^2)^5$

13) Coefficient of x^2y^{20} in expansion of $(x-2y^4)^7$

14) Coefficient of x^4 in expansion of $(4x^2-1)^4$

15) Coefficient of y^3x^8 in expansion of $(y-2x^2)^7$

16) Coefficient of x^4y^3 in expansion of $(3x^4-y)^4$

17) Coefficient of x^2y^3 in expansion of $(x^2-3y)^4$

18) Coefficient of y^2 in expansion of $(2y^2-1)^6$

19) Coefficient of y^8x^3 in expansion of $(y^4-3x)^5$

20) Coefficient of y^4 in expansion of $(3y^4-1)^5$

Find each term described.

21) 4th term in expansion of $(1-5x^3)^3$

22) 2nd term in expansion of $(5y^3-1)^3$

23) 2nd term in expansion of $(1-3y^4)^4$

24) 2nd term in expansion of $(2x^2-1)^3$

25) 3rd term in expansion of $(4x^4-1)^4$

26) 5th term in expansion of $(1-4m^2)^4$

27) 2nd term in expansion of $(1-4v^4)^4$

28) 1st term in expansion of $(2x^4-1)^4$

29) 3rd term in expansion of $(3m^4-1)^4$

30) 2nd term in expansion of $(3u^2-1)^3$

Answers:

1) $1 + 10a + 40a^2 + 80a^3 + 80a^4 + 32a^5$
2) $125b^3 + 75b^2 + 15b + 1$
3) $8b^3 - 12b^2 + 6b - 1$
4) $243u^5 + 405u^4 + 270u^3 + 90u^2 + 15u + 1$
5) $64y^{24} - 192y^{20} + 240y^{16} - 160y^{12} + 60y^8 - 12y^4 + 1$
6) $1 + 10x^3 + 40x^6 + 80x^9 + 80x^{12} + 32x^{15}$
7) $243x^{10} - 405x^8 + 270x^6 - 90x^4 + 15x^2 - 1$
8) $256n^{12} + 256n^9 + 96n^6 + 16n^3 + 1$
9) $64y^{12} - 192y^{10} + 240y^8 - 160y^6 + 60y^4 - 12y^2 + 1$
10) $1 + 12n^3 + 54n^6 + 108n^9 + 81n^{12}$
11) -672
12) -240
13) -672
14) 96
15) 560
16) -12
17) -108
18) -12
19) -270
20) 15
21) $-125x^9$
22) $-75y^6$
23) $-12y^4$
24) $-12x^4$
25) $96x^8$
26) $256m^8$
27) $-16v^4$
28) $16x^{16}$
29) $54m^8$
30) $-27u^4$