

Expand each.

1. $(x - 2y)^5$

2. $(3c + 4d)^4$

3. Find the 4th term: $(2a - 5)^{12}$

Expand each.

1. $(x - 2y)^5$

Coefficients are from Row 5 of Pascal's Δ .

$$1x^5 - 5x^4(2y) + 10x^3(2y)^2 - 10x^2(2y)^3$$

$$+ 5x(2y)^4 - 1(2y)^5$$

$$= x^5 - 10x^4y + 40x^3y^2 - 80x^2y^3 + 80xy^4 - 32y^5$$

2. $(3c + 4d)^4$

Coefficients are from Row 4 of Pascal's Δ

$$1(3c)^4 + 4(3c)^3(4d) + 6(3c)^2(4d)^2$$

$$+ 4(3c)(4d)^3 + 1(4d)^4$$

$$= 81c^4 + 4(27c^3)(4d) + 6(9c^2)(16d^2) + 4(3c)(64d^3) + 256d^4$$

$$= 81c^4 + 432c^3d + 864c^2d^2 + 768cd^3 + 256d^4$$

3. Find the 4th term: $(2a - 5)^{12}$

exponents add to 12

$$(2a)^{12} - (2a)^{11} + (2a)^{10} - 220(2a)^9(5)^3$$

$$-220(5/2a^9)(125) = -14080000a^9$$

Row 12 of Pascal's Δ : 1 12 66 220