A.APR.C.5: Binomial Expansions 4

1   What is the fourth term in the expansion of $(2x - y)^5$?

2   What is the third term in the expansion of $(x + 1)^5$?

3   Find, in simplest form, the middle term in the expansion of $\left(x^2 + \dfrac{1}{x} \right)^6$.

4   Expand and express in simplest form: $\left(x - \dfrac{1}{x} \right)^4$.

5   Write the binomial expansion of $(2x - 1)^5$ as a polynomial in simplest form.

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Answer Section

1 ANS:

$-40x^2 y^3$. $_5C_3(2x)^{5-3}(-y)^3 = 10(4x^2)(-y^3) = -40x^2 y^3$

REF: 010726b

2 ANS:

$10x^3$

REF: 069515siii

3 ANS:

$20x^3$

REF: 019941siii

4 ANS:

$x^4 - 4x^2 + 6 - \dfrac{4}{x^2} + \dfrac{1}{x^4}$

REF: 069641siii

5 ANS:

$32x^5 - 80x^4 + 80x^3 - 40x^2 + 10x - 1$. $_5C_0(2x)^5(-1)^0 = 32x^5$. $_5C_1(2x)^4(-1)^1 = -80x^4$. $_5C_2(2x)^3(-1)^2 = 80x^3$. $_5C_3(2x)^2(-1)^3 = -40x^2$. $_5C_4(2x)^1(-1)^4 = 10x$. $_5C_5(2x)^0(-1)^5 = -1$

REF: 011136a2