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Teorema do binômio - CT11348

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

$$\begin{array}{ccccccc} 1 \cdot 1^6 & 6 \cdot 1^5 & 15 \cdot 1^4 & 20 \cdot 1^3 & 15 \cdot 1^2 & 6 \cdot 1^1 & 1 \\ (2x^2)^0 & (2x^2)^1 & (2x^2)^2 & (2x^2)^3 & (2x^2)^4 & (2x^2)^5 & (2x^2)^6 \end{array}$$

$\downarrow$

$$15 \cdot 16 x^8$$

$$240 x^8$$

(C)

2)

$$(14x - 13y)^{237}$$

$$(14-13)^{237}$$

$$1^{237} = 1$$

(B)

3)

$$5+k=11$$

$$x^5 \cdot a^6$$

$$5+6=11$$

$$\sqrt[6]{3} a$$

$$3a^{\frac{1}{6}}$$

(A)

4)  $(x + x^{-2})^9$

$$\binom{9}{k}$$

$$x^{9-k} \cdot (x^{-2})^k = x^0$$

$$9-k-2k=0$$

$$9-3k=0$$

$$k=3$$

(D)

$$5) (x + x^{-2})^n \quad \binom{n}{k}$$

$$x^{n-k} + (x^{-2})^k = x^0$$

$$n - 3k = 0$$

$n$  é múltiplo  
de 3

(C)

$$6) \left( 3x^3 + \frac{2}{x^2} \right)^5 = (3x^3 + 2x^{-2})^5$$

$$1(3x^3)^5 (2x^{-2})^0 + 5(3x^3)^4 (2x^{-2})^1 + 10(3x^3)^3 (2x^{-2})^2 +$$

$$10(3x^3)^2 (2x^{-2})^3 + 5(3x^3)^1 (2x^{-2})^4 + (3x^3)^0 (2x^{-2})^5$$

$$243x^{15} + 810x^{10} + 1080x^5 + 720 + \frac{240}{x^5} + \frac{32}{x^{10}}$$

(E)

$$7) (2x + x)^5$$

$$(2+1)^5$$

$$3^5 = 243$$

(C)