

## TAREFA: TEORIA DO BINÔMIO

01:  $(1+2x^2)^6$   $x^8 = ?$

coeficiente do termo  $x^2$

↳ linha 6

$$\binom{6}{n} 1^{6-n} \cdot (2x^2)^n =$$

$$2n = 8$$

$$\binom{6}{n} 2^n \cdot x^{2n} \quad x, n = 0, 1, \dots, 6.$$

$$n = 4$$

$$\binom{6}{4} 2^4 \cdot x^8 = \frac{6!}{4!2!} \cdot 16 \cdot x^8 \rightarrow \frac{6 \cdot 5 \cdot 4!}{4!2!} \cdot 16 \cdot x^8$$

$$\frac{6 \cdot 5}{2!} \cdot \frac{16}{2!} x^8 = \frac{30}{2!} \cdot \frac{16}{2!} x^8 = \frac{480}{2!} x^8 = \frac{480}{2} x^8 = 240 x^8$$

(C)

2:  $(14x-13y)^{237}$

$$(14x-13y)^{237} = (14 \cdot 1 - 13 \cdot 1)^{237} = (14-13)^{237} = 1^{237} = 1$$

(B)

$$03: (x+a)^{11} = 1386 x^5$$

$$\binom{11}{k} x^{11-k} \cdot a^k = 1386 x^5$$

$$k = 6$$

$$\binom{11}{6} x^{11-6} \cdot a^6 = 1386 x^5$$

$$\binom{11}{6} x^5 \cdot a^6 = 1386 x^5 \rightarrow \frac{11!}{6!5!} \cdot a^6 = 1386 \rightarrow$$

$$\frac{11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6!}{6!5!} \cdot a^6 = 1386 \rightarrow \frac{55440}{120} \cdot a^6 = 1386$$

$$462 a^6 = 1386$$

$$a^6 = 1386$$

$$462$$

R: (A)

$$a^6 = 3$$

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

$$f_{CS}(y, 81 - x, 41) = 2$$

$$(8) \quad 1 = f_{CS}(\dots) = f_{CS}(81 - 11) = f_{CS}(1, 81 - 1, 41) = f_{CS}(1, 81 - 5, 41)$$



$$04: \left( x + \frac{1}{x^2} \right)^9$$

$$\binom{9}{k} x^{9-k} \cdot \left( \frac{1}{x^2} \right)^k \rightarrow \binom{9}{k} \cdot x^{9-k} \cdot (1)^k \cdot (x^{-2})^k$$

$$(1)^k \cdot \binom{9}{k} \cdot (x^{9-k}) \cdot x^{-2k} \rightarrow 1^k \cdot \frac{9!}{k!} \cdot x$$

$$9 - 3k = 0$$

R: (D)

$$9 = 3k$$

$$9 = k$$

$$3$$

$$05: \left( x + \frac{1}{x^2} \right)^n$$

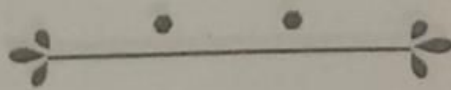
$$\binom{n}{p} x^{n-p} \cdot \left( \frac{1}{x^2} \right)^p \rightarrow \binom{n}{p} \cdot x^{n-p} \cdot (1)^p \cdot (x^{-2})^p$$

$$(1)^k \cdot \binom{n}{k} \cdot x^{n-k} \cdot x^{-2k} \rightarrow 1 \cdot \frac{n!}{k!} \cdot x$$

$$n - 3k = 0$$

$$n = 3k$$

(C)



07:  $(2x + y)^5 = ?$   $x=1$   $y=1$

$$(2x + y)^5 = (2 \cdot 1 + 1)^5 = 3^5 = 243$$

R: (C)