

# Subiectul 1 / octombrie 2019

Partea I:

$$1. a) a = (5^2 - 2^5 : 2) : 3 - 1^{2019}$$

$$a = (25 - 32 : 2) : 3 - 1$$

$$a = (25 - 16) : 3 - 1$$

$$a = 9 : 3 - 1$$

$$a = 3 - 1$$

$$a = \boxed{2}$$

$$b) b = (2^4)^4 : 2^2 \cdot (3^2 - 1) - 2019^0 \cdot 2^2$$

$$b = 2^{16} : 2^2 \cdot (9 - 1) - 1 \cdot 4$$

$$b = 2^{14} \cdot 8 - 4$$

$$b = 2^{14} \cdot 2^3 - 4$$

$$b = 2^{17} - 4$$

$$b = 2^5 \cdot 2^5 \cdot 2^5 \cdot 2^2 - 4$$

$$b = 32 \cdot 32 \cdot 32 \cdot 4 - 4$$

$$b = 1024 \cdot 32 \cdot 4 - 4$$

$$b = 32768 \cdot 4 - 4$$

$$b = 131072 - 4$$

$$b = \boxed{131068}$$

$$2. a) 4^{47} \boxtimes 8^{31}$$

$$4^{47} = (2^2)^{47} = 2^{94}$$

$$8^{31} = (2^3)^{31} = 2^{93}$$

$$b) 9^{15} \boxtimes 16^7$$

$$9^{15} = (3^2)^{15} = 3^{30}$$

$$16^7 = (2^4)^7 = 2^{28}$$

$$3. a) 29 + 28 + 27 + \dots + 6 + 5 = 4 + 3 + 2a$$

$$(29 + 5) \cdot 25 : 2 = 4 + 3 + 2a$$

$$34 \cdot 25 : 2 = 7 + 2a$$

$$850 : 2 = 7 + 2a$$

$$425 = 7 + 2a$$

$$2a = 425 - 7$$

$$2a = 418$$

$$a = 418 : 2$$

$$a = \boxed{209}$$

$$b) 144 : (n - 150) = 6$$

$$n - 150 = 144 : 6$$

$$n - 150 = 24$$

$$n = 150 + 24$$

$$n = \boxed{174}$$

Partea II:

$$1. 3x + 77 = (x + 133) \cdot 2$$

$$3x + 77 = 2 \cdot x + 2 \cdot 133$$

$$3x + 77 = 2x + 266$$

$$3x - 2x = 266 - 77$$

$$x = \boxed{189}$$

$$2. 38 + x + 36 + x = 14 + x + 12 + x + 10 + x + 8 + x$$

$$2x + 74 = 4x + 44$$

$$74 - 44 = 4x - 2x$$

$$30 = 2x$$

$$x = \boxed{15} \text{ peste } 15 \text{ ani}$$

### Partea III:

1.1.  $122; 263; 3124; 4205; \underline{5306}; \underline{6427}$

2.  $100 + 100 + 10 + 100 + 20 + \dots + 100 + 300$

$$= 100 \cdot 31 + 10 \cdot (1 + 2 + 3 + \dots + 30)$$

$$= 3100 + 10 \cdot (1 + 30) \cdot 30 : 2$$

$$= 3100 + 10 \cdot 31 \cdot 15$$

$$= 3100 + 4650$$

$$= \boxed{7750} \text{ (suma totală ce va fi distribuită)}$$