João dos Santos Neto

1º

$2^3 = 8$ par $6^2 = 36$ par

$2^5 = 32$ par $6^5 = 7776$ par

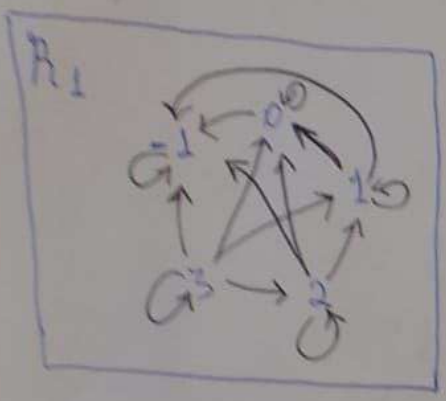
$2^6 = 64$ par $6^9 = 10077696$ par

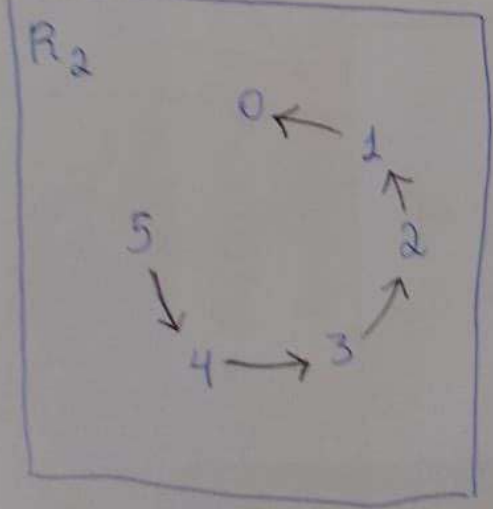
$2^9 = 512$ par $6^{13} = 13060694016$ par

$2^{13} = 8192$ par $6^3 = 216$ par

alternativa "C"

2º a)

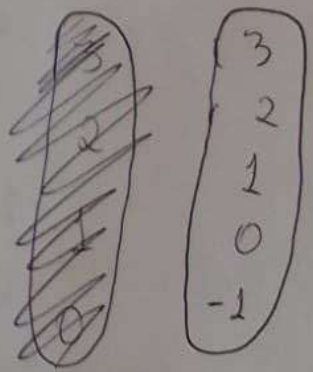




3º R_1

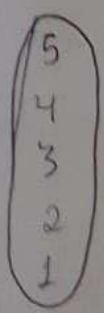
b) $Dm(R_1) = \{(3,2);(3,1);(3,0);(3,-1);(2,1);(2,0);(2,-1);(1,0);(0,-1)\}$

$Dm(R_1)$



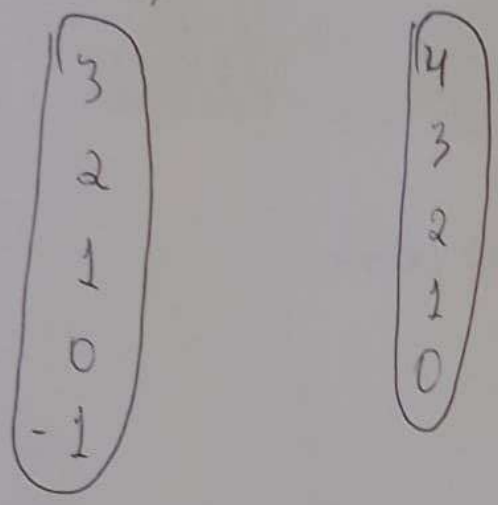
R_2 $Dm(R_2) = \{(5,4);(4,3);(3,2);(2,1);(1,0)\}$

$Dm(R_2)$



(4º) R_1 R_2

c) $Im(R_1)$ $Im(R_2)$



(7º) $f(x) = 6 - 5x$

$f(2) = 6 - 5 \cdot 2$ | $f(-2) = 6 - 5 \cdot (-2)$

$f(2) = 6 - 10$ | $f(-2) = 6 + 10$

$f(2) = -4$ | $f(-2) = 16$

$x = f(2) - 3 \cdot f(-2)$

$x = -4 - 3 \cdot 16$

$x = -4 - 48$

$\boxed{x = -52}$

(5º) a)

$g(f(x)) = 2x - 1$

$g(x^3 + x^2 + 1) = 2(x^3 + x^2 + 1) - 1$

$= 2x^3 + 2x^2 + 2 - 1$

$g(f(x)) = 2x^3 + 2x^2 + 1$

(8º) $f(x) = 6 - 5x$

$21 = 6 - 5x$

$21 - 6 = -5x$

$15 = -5x$

$\frac{15}{-5} = x$

$\boxed{x = -3}$

b) $fog(x) = x^3 + x^2 + 1$

$= (2x - 1)^3 + (2x - 1)^2 + 1$

$8x^3 - 12x^2 + 6x - 1 + 4x^2 - 4x + 1 + 1$

$8x^3 - 12x^2 + 4x^2 + 6x - 4x + 1 + 1 - 1$

$fog(x) = 8x^3 - 8x^2 + 2x + 1$

c) demente $fog(x)$.

d) Todas são sobrejetoras

6º) $R_T(x) = -x^2 + 300x$

$R_T(150) = -(150)^2 + 300 \cdot 150 = 22500$

$C_T = 10000 + 50 \cdot 150$

$= 17500$

Portanto, o lucro será de $22500 - 17500 = \boxed{5000}$