Soluție

1.a. Avem $D(-1)=\begin{vmatrix} 1 & 1 & -1 \\ 1 & -1 & 1 \\ -1 & 1 & 1 \end{vmatrix}=-1-1-1+1-1-1=-4.$

b. Avem $D(a)=\begin{vmatrix} 1 & 1 & a \\ 1 & a & 1 \\ a & 1 & 1 \end{vmatrix}=a+a+a-a^3-1-1=-a^3+3a-2=-(a-1)^2(a+2).$

c. Din $-(a-1)^2(a+2)=-4 \Leftrightarrow -(a+1)^2(a-2)=0 \Leftrightarrow a_1=-1$ sau $a_2=2.$

2.a.

$x\circ y=xy-10(x+y)+110=xy-10x-10y+100+10=x(y-10)-10(y-10)+10=(x-10)(y-10)+10$

b. $C_{10}^1\circ C_{20}^1=(10-10)(20-10)+10=10$

c. $x\circ(x-1)=10\Leftrightarrow(x-10)(x-11)+10=10\Leftrightarrow(x-10)(x-11)=0\Leftrightarrow x=10$ sau $x=11.$