Answer on Question#37676 - Math - Other

Number of surjections that can be defined from $\{1,2,\dots,n\}$ onto $\{1,2\}$ is

a) $2n$
b) $nP2$
c) 2^n
d) $2^n - 2$

Solution.

Let X, Y are sets. $|X| = n, |Y| = m$. Then number of surjections that can be defined from X onto Y is

$$D_n^m = \sum_{i=0}^{m} (-1)^k * (m-k)^n * C_m^k$$

If $m = 2$, we have

$$D_n^2 = 2^n - 2$$

Answer: d) $2^n - 2$