**Question #9888**

For any positive integer n,prove that $n^3 - n$ is divisible by 6.
Write $n^3 - n = n(n-1)(n+1)$. Note that there is definitely an even number among $n, n-1, n+1$, and due to they are consecutive integers, one of them is divisible by 3. 2 and 3 are mutually prime, hence $n(n-1)(n+1)$ is divisible by 6. And we are done.