**Answer:**

Derivation of Newton’s 1st law of motion from Newton’s 2nd law of motion:

………….

1st law states that: if an object is at rest or is in uniform motion then it will continue to be in uniform motion or in its motion of rest unless and until it is compelled by an external force.

2nd law states that: the rate of change of momentum is directly proportional to the force applied and it takes place in the direction where the force is applied. i.e. F= m\*a

………………….

Now,

If force = 0 N

Then,

F = m\*a

Here, we know that mass can’t be 0 kg therefore acceleration must have to be 0 m/s2.

Therefore,

a = 0.

Acceleration=0m/s2.

Now this means two things whether the object is at rest or it is in constant velocity or uniform motion. (When there is no force applied the object must be in rest or it should be in a constant velocity…………this was the proof given by us).

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So, if you see now from this proof the Newton’s 1st law of motion has been concluded that the object will continue its state of rest or of uniform motion unless no external force acts on it.

Thank you ……………

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