

St John Baptist De La Salle Catholic School, Addis  
Ababa

Grade 11 Physics Homework 1  
3<sup>rd</sup> Quarter

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February 23, 2024

**Information**

- The homework is due on **Monday, February 26th**.
- You should Work on it **INDIVIDUALLY**.
- For purposes of neatness and simplicity of grading, you should do the homework on an **A-4 paper**. However, use your exercise book as a scrapbook.
- **All answers should be written using a pen. Do not use a pencil. If you make an error, strike a line through it and correct it on the next line.**
- **DO NOT PREPARE A COVER PAGE, JUST WRITE YOUR NAME ON THE SAME PAGE AS THE ANSWERS**

**Problems & Solutions**

1. Show that  $K = \frac{\vec{p} \cdot \vec{p}}{2m}$ .
2. What is the change in momentum of a 3.0-kg ball moving at 3.0 m/s perpendicular to a wall rebounding from the wall at 1.75 m/s?
3. What is the momentum (as a function of time) of a 5.0-kg particle moving with a velocity  $v(t) = (3\hat{i} + \frac{4t}{s}\hat{j})\text{m/s}$ ? What is the net force acting on this particle?
4. A man is marooned at rest on level frictionless ice. In desperation, he hurls his shoe to the right at 20 m/s. If the man weighs 740 N and the shoe weighs 6.0 N, what is the speed with which the mans leaves to the left?
5. A 5-kg object can move along the x axis. It is subjected to a force  $\vec{F}$  in the positive x direction; a graph of F as a function of time t is shown below. Over the time the force is applied, what is the change in the velocity of the object?

