Physics Notes

Dowland Aiello

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1 Displacement

- **Displacement** can be described as an object's change in position relative to a reference frame, and can be expressed mathematically as follows:

$$\Delta x = x_f - x_0$$

1.1 Example

A cyclist rides 3 km west and the turns around and rides 2 km east. (a) What is her displacement? (b) What distance does she ride? (c) What is the magnitude of her displacement?

1. Her displacement is -1:
$$\Delta x = x_f - x_0; \Delta x = -1 - 0; \Delta x = -1km$$
2. She traveled 5 kilometers:
$$3km + 2km = 5km$$
3. The magnitude of her displacement is 1:
$$|-1| = 1$$

2 Vectors, Scalars, and Coordinate Systems

3 Time, Velocity, and Speed

- Time can be best defined in terms of how it is measured. Thus, the following definition would suffice in the context of physics: time is an invertal over which change occurs.

4 Acceleration

5 Motion Equations for Constant Acceleration in One Dimension

6 Falling Objects

7 Graphical Analysis of One Dimensional Motion