# Position-Time Graphs: Conceptual Analysis
Video Notes
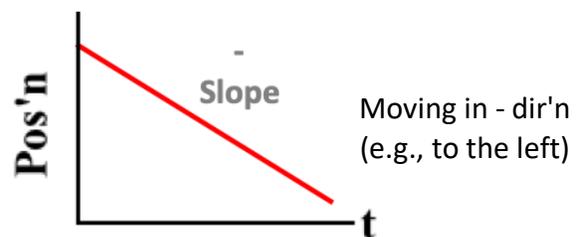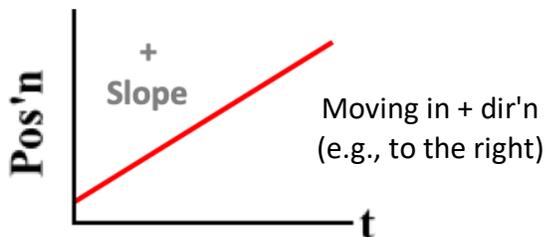
Questions
- How can a description of an object's motion be determined from a position-time graph?
- And how can a position-time graph be related to other representations of an object's motion ... like dot diagrams?
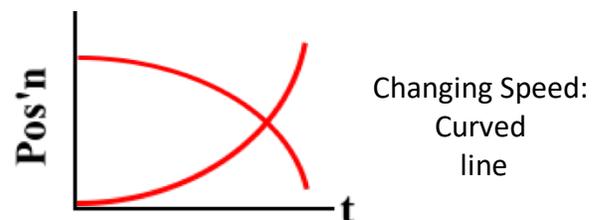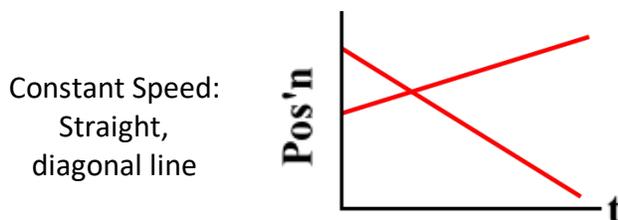
Stationary vs. Moving Objects:

Stationary or At Rest
(horizontal line)

Moving Objects
(diagonal or curved lines)
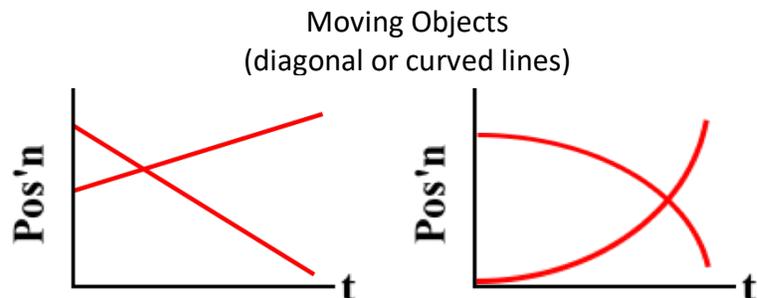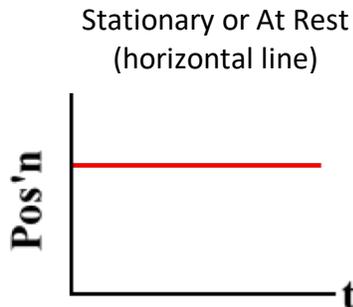
Moving in "+" Direction vs. Moving in "-" Direction

+
Slope

Moving in + dir'n
(e.g., to the right)

-
Slope

Moving in - dir'n
(e.g., to the left)

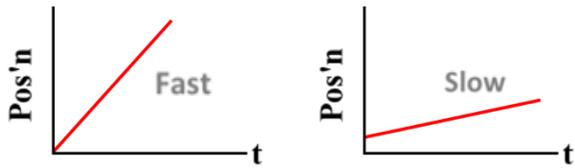## Constant Speed vs. Changing Speed

Constant Speed:
Straight,
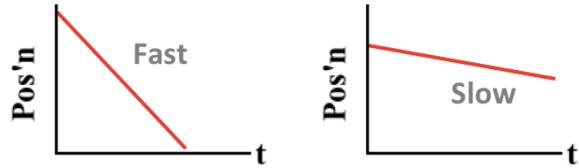diagonal line

Changing Speed:
Curved
line

Fast versus Slow

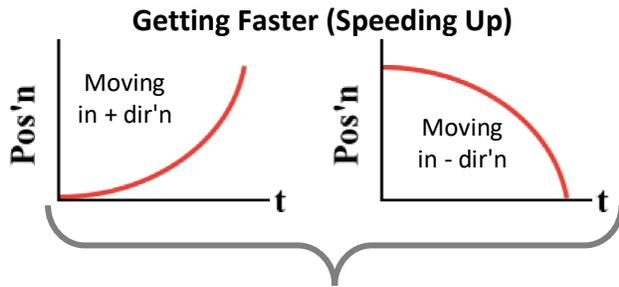Speed is related to the steepness of the line. Steeper lines indicate higher speeds.
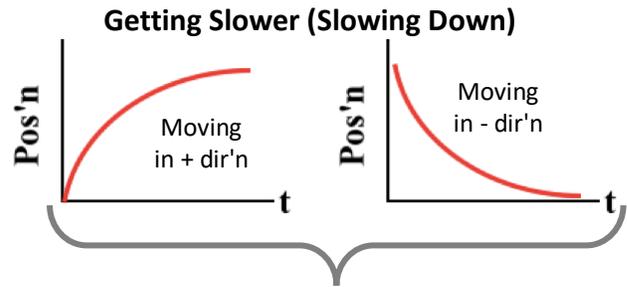
Moving in + direction (e.g., to the right)   Moving in - direction (e.g., to the left)

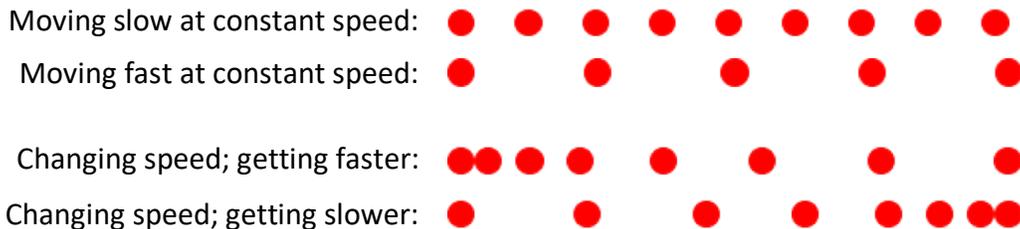## The Four Changing Speed Curves

Getting Faster (Speeding Up)   **Getting Slower (Slowing Down)**

Moving in + dir'n   Moving in - dir'n   Moving in + dir'n   Moving in - dir'n

Starts flat and finishes steep.   Starts steep and finishes flat.

Dot Diagrams: pay attention to spacing between dots; arrows indicate direction of motion

Moving slow at constant speed:

Moving fast at constant speed:

Changing speed; getting faster:

Changing speed; getting slower:

Strategy for Relating Dot Diagrams to Position-Time Graphs

Analyze the Dot Diagram ➡ Describe Motion in Words ➡ Match Words to p-t Graph Features

➡ Moving fast in the - direction ➡ Steep, - Slope