3-1 Notes

Vectors

Scalars

- A quantity that can be specified from its magnitude only with units
- No direction needed
- Examples are speed and distance
- Represented by italics; $v = 2.4$ m/s

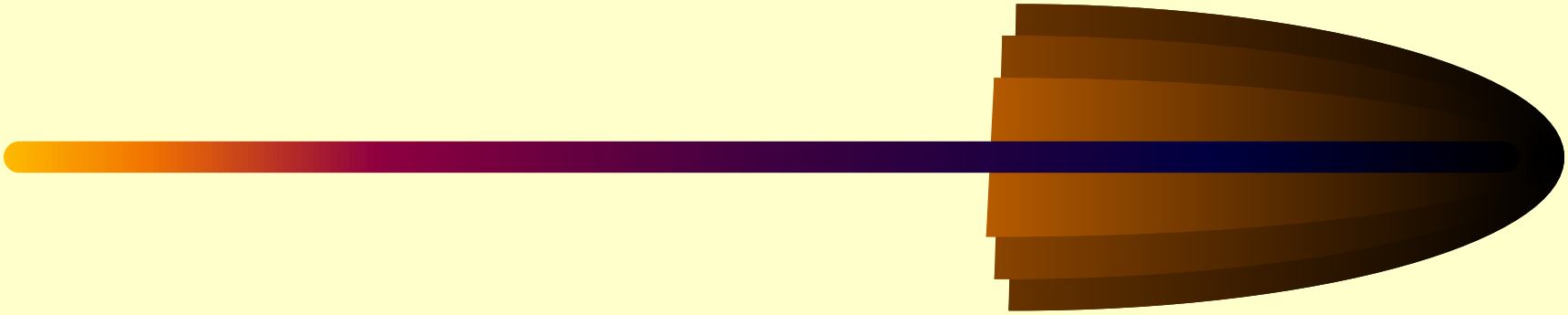
Vectors

- A quantity with both magnitude and direction.
- Examples are velocity and displacement.
- Represented by boldface; **v** = 2.4 m/s to the north
- 2 Ways to write out Vectors
- Polar Notation; Rectangular Notation

Adding Vectors

- Vectors can be added graphically.
- When adding two or more vectors, the answer is called the resultant.
- Vectors can be moved parallel to themselves in a diagram as long as they don't change direction or length.
- Draw vectors using head to tail method.

An arrow shoots 34 m/s at an angle of 20 degrees North West than the wind blows 25 m/s at an angle of 10 degrees North West. What is the resultant?



Pythagorean Theorem

- If two vectors are at a 90^0 angle, use the Pythagorean Theorem to find the resultant vector.
- $C^2 = a^2 + b^2$
- Find the angle of the resultant vector by using Tangent function
- Tan θ= opp / adj

- A pirate walks 45 m north, then 7.5 m east. What is his displacement?
- Use Pythagorean theorem since it is a 90 degree angle.
- Must find degrees, use tan

Chapter 3-3 Notes

Projectile Motion

- Velocity and displacement can be broken down into x and y components.
- Imagine a high jumper, he or she has both a horizontal and a vertical velocity.

Projectile Motion

- Objects that are thrown or launched into the air and are subject to gravity are called projectiles.
- The path of a projectile is a curve called a parabola.
- The horizontal velocity of the projectiles for sample problems will be considered constant -no air resistance

Equations

- $y = -1/2\ g\ (t^2)$
- $x = v_x\ (t)$