Chapter 3: Vector Addition and Subtraction

The addition of vectors is not the same as the addition of scalars.

Consider the vectors **A** and **B**

The vector sum = resultant = **R** = **A** + **B**

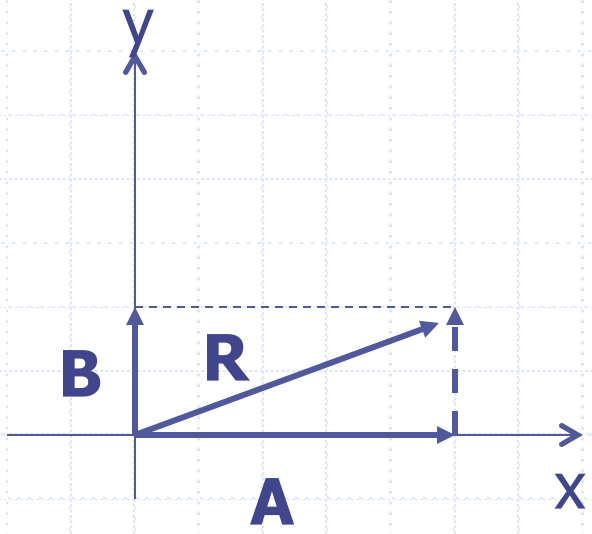
but, $R \neq A + B$

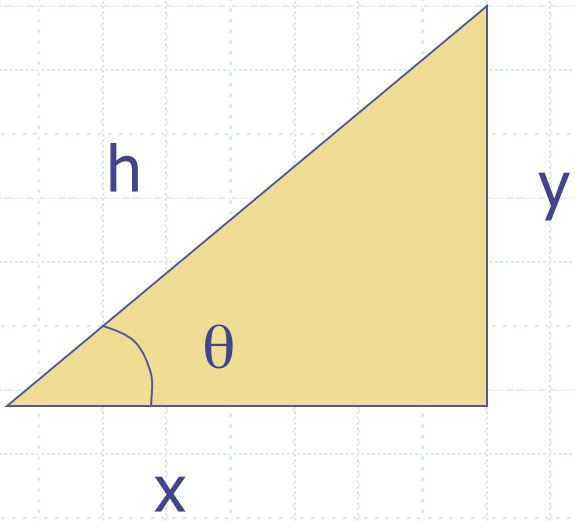
Example. A=50.0 m, B=20.0 m

$R \neq 70.0$ m

Use Pythagorean theorem

$R = \sqrt{(A^2+B^2)} = 53.9$ m





Direction?

Use trigonometric functions

$x=h\cos\theta$, $y=h\sin\theta$, $y=x\tan\theta$

Three ways:

$\theta = \tan^{-1}(B/A) = 21.8°$ <- dimensionless

$\theta = \cos^{-1}(A/R) = 21.8°$ (or 21.7° for low precision)

$\theta = \sin^{-1}(B/R) = 21.8°$

Vector: **R** = 53.9 m @ 21.8°