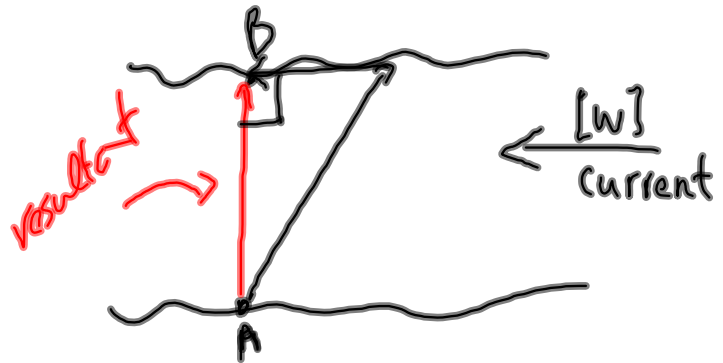


From HW3. a) head $[N 39^\circ E]$

b) 0.65h

TODU

- PP on Sheet
- PP/110 (21, 22, 23, 25, 27)

QUIZ - Thurs

- vector addition (scale diagram/mathematical)
- components
- relative motion problems

$$34. \quad I \propto \frac{1}{d^2}$$

$$I_1 = \frac{k}{d_1^2}$$

$$I_2 = \frac{k}{d_2^2}$$

$$\text{but } I_2 = 4I_1$$

$$4 \frac{k}{d_1^2} = \frac{k}{d_2^2}$$

$$\frac{4}{(6.0\text{m})^2} = \frac{1}{d_2^2}$$

$$\frac{1}{9.0\text{m}^2} = \frac{1}{d_2^2}$$

$$d_2 = 3.0\text{m}$$

OR

$$I \propto \frac{1}{d^2}$$

$$d^2 \propto \frac{1}{I}$$

$$d^2 = \frac{k}{I}$$

$$d = \sqrt{\frac{k}{I}}$$

$$d' = \sqrt{\frac{k}{4I}}$$

$$d' = \frac{1}{2} \sqrt{\frac{k}{I}}$$

← new d is d'
new I is 4I

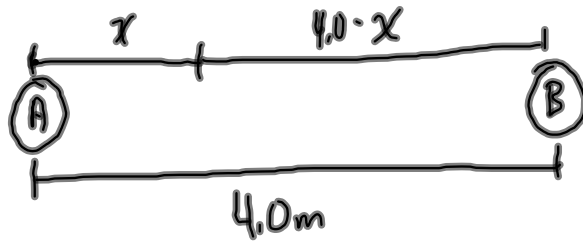
← original d

$$d' = \frac{1}{2} d$$

$$d' = \frac{1}{2} (6.0\text{m})$$

$$\boxed{d' = 3.0\text{m}}$$

b)



$$I_A = \frac{k}{d_A^2}$$

$$I_B = \frac{k}{d_B^2}$$

$$I_A = 9I_B$$

$$\frac{k}{d_A^2} = \frac{9k}{d_B^2}$$

$$9d_A^2 = d_B^2$$

$$9x^2 = (4-x)^2$$

$$9x^2 = 16 - 8x + x^2$$

$$8x^2 + 8x - 16 = 0$$

$$8(x^2 + x - 2) = 0$$

$$8(x+2)(x-1) = 0$$

~~$$x+2=0$$~~

~~$$x=-2$$~~

$$x-1=0$$

$$x=1$$