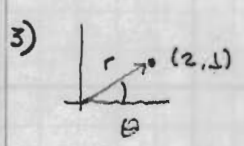


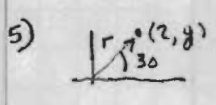
Chapter 3 - 3, 5, 11, 18, 26, 44, 50
 Chapter 4 - 3, 5, 8

Thu Apr 19



$$r = (2^2 + 1^2)^{1/2} = \sqrt{5} = \boxed{2.24 \text{ m}}$$

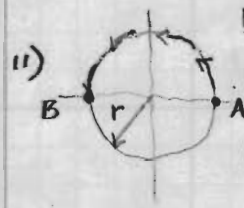
$$\theta = \tan^{-1}(1/2) = \boxed{26.6^\circ}$$



$$r^2 = 2^2 + y^2$$

$$y = r \sin 30 = r/2 \Rightarrow y^2 = r^2/4$$

$$\Rightarrow r^2 = 4 + \frac{r^2}{4} \Rightarrow \frac{3r^2}{4} = 4 \Rightarrow r^2 = \frac{16}{3} = r = \frac{4}{\sqrt{3}} = \boxed{2.31}$$



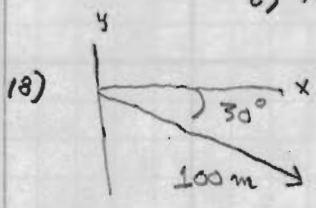
$r = 5.00 \text{ m}$

a) $\vec{B} - \vec{A} = (-5, 0) - (5, 0) = (-10, 0) \Rightarrow$ magnitude = $\boxed{10}$

b) distance = $\pi r = 3.1416 \times 5 = \boxed{15.7}$

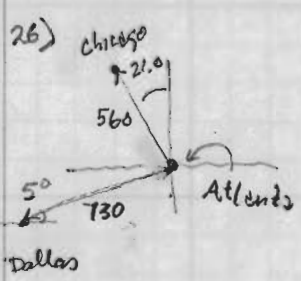
c) $\vec{A} - \vec{A} = \{0, 0\}$ magnitude = $\boxed{0}$

$y = r \sin 30 = \boxed{1.15}$



$$x = 100 \cos 30 = 100 \frac{\sqrt{3}}{2} = \boxed{50\sqrt{3} \text{ m}} \rightarrow 86.6 \text{ m}$$

$$y = -100 \sin 30 = \boxed{-50 \text{ m}}$$

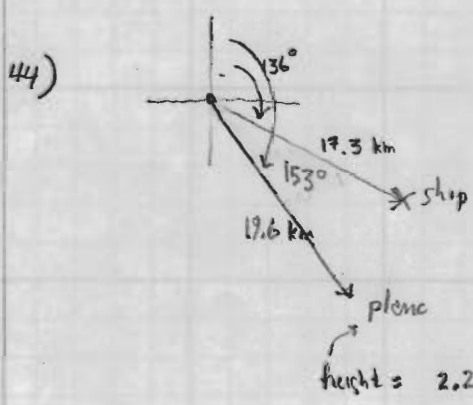


Dallas = $(-730 \cos 5^\circ, -730 \sin 5^\circ)$

Chicago = $(-560 \sin 21, +560 \cos 21)$

wewant: Chicago - Dallas = $(527, 586)$

distance = $\boxed{788}$
 time = $\boxed{480}$



ship = $\{17.3 \cos 46, -17.3 \sin 46, 0\}$

plane = $\{19.6 \cos 63, -19.6 \cos 63, 2.2\}$

ship - plane = $(3.12, 5.02, -2.2)$

|ship - plane| = $\boxed{6.31 \text{ km}}$

50) $\vec{A} = (6, -8)$
 $\vec{B} = (-8, 3)$
 $\vec{C} = (26, 19)$

$$a(6, -8) + b(-8, 3) + (26, 19) = 0$$

$$\Rightarrow \begin{cases} 26 - 8a = -26 \times (1) = 24a - 32b = -104 \\ -8a + 3b = -19 \times (3) = -24a + 9b = -57 \end{cases}$$

$$\begin{array}{r} 24a - 32b = -104 \\ -24a + 9b = -57 \\ \hline -23b = -161 \Rightarrow b = 7 \end{array}$$

$$a = \frac{8b - 26}{6} = \frac{56 - 26}{6} = 5$$

$\boxed{5\vec{A} + 7\vec{B} + \vec{C} = 0}$

3.



$$v \cos 60 = v_x = 5 \cdot \frac{1}{2} = \boxed{2.5 \text{ m/s}}$$

5.



$$\vec{r}_i = (0, 0)$$

$$\vec{v}_i = (3, -2)$$

$$\vec{v}_f = (9, 7)$$

$$\vec{a} = \frac{\Delta v}{\Delta t} = \frac{v_f - v_i}{3} = \frac{(9, 7) - (3, -2)}{3} = \left(\frac{6, 9}{3}\right)$$

$$(0, 0) = \boxed{2i + 3j}$$

$$r = r_0 + v_i t + \frac{1}{2} a t^2$$

$$= \boxed{(3, -2)t + \frac{1}{2}(2, 3)t^2}$$

8.

$$\vec{r}_0 = (0, 0)$$

$$\vec{a} = (0, 3)$$

$$\vec{v}_0 = (500, 0)$$

$$\vec{r} = \vec{r}_0 + \vec{v}_0 t + \frac{1}{2} \vec{a} t^2 = \boxed{(500, 0)t + \frac{1}{2}(0, 3)t^2}$$

$$\vec{v} = \vec{v}_0 + \vec{a} t = \boxed{(500, 0) + (0, 3)t}$$

$$\vec{r} = (500, 0)2 + \frac{1}{2}(0, 3)2^2 = (1000, 0) + (0, 6) = \boxed{(1000, 6)}$$

$$\vec{v}_2 = (500, 0) + (0, 3)2 = \boxed{(500, 6)}$$

$$\text{speed} = (500^2 + 3^2)^{1/2} \approx \boxed{500}$$