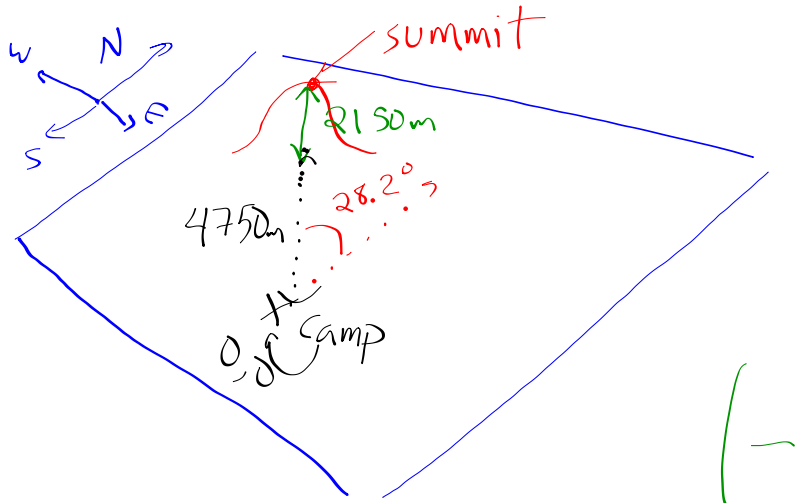
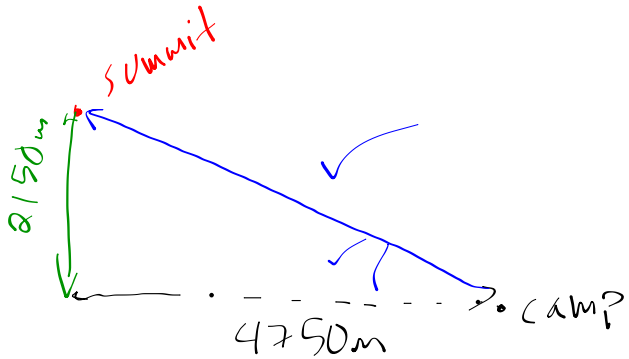
17. The summit of a mountain, 2150 m above a camp, is measured on a map to be 4750 m horizontally from the camp in a direction 28.2° west of due north. What are the components of the displacement vector from camp to summit? What is its length? Choose the x-axis east, y-axis north, and z-axis up.





$(-4750 \sin 28.2, 4750 \cos 28.2, 2150)$

8. Three vectors are shown in Figure 2-19; their magnitudes are given in arbitrary units. Determine the sum of the three vectors. Give the resultant in terms of
   a) components.
   b) magnitude and angle with the x-axis.

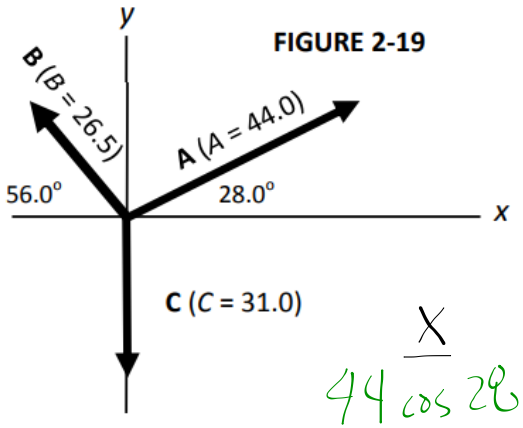
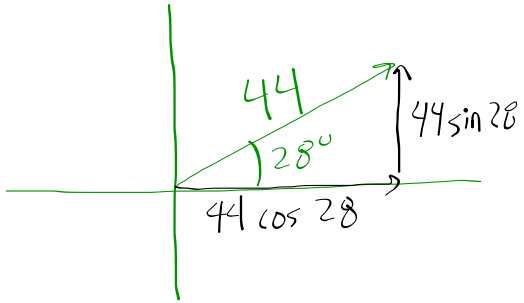
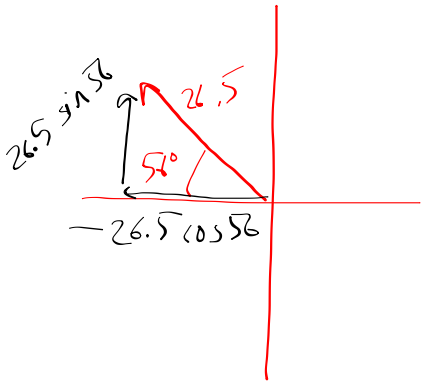
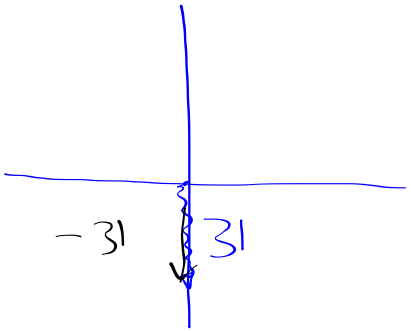


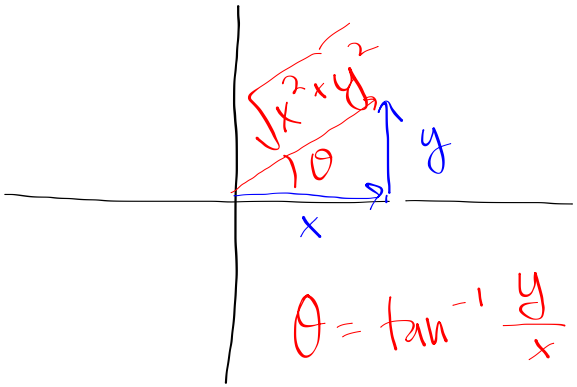
FIGURE 2-19





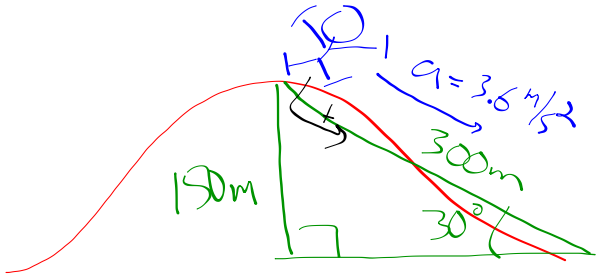
x	y
$44\cos 28$	$44\sin 28$
$-26.5\cos 56$	$26.5\sin 56$
0	−31





$\theta = \tan^{-1}\frac{y}{x}$

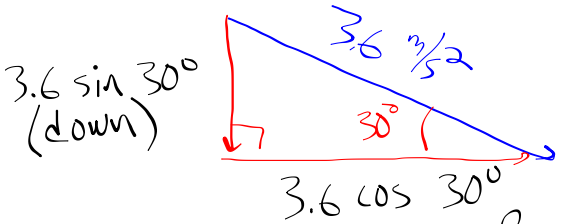
12. A skier is accelerating down a 30.0° hill at 3.60 m/s^2.
    a) What is the vertical component of her acceleration?
    b) How long will it take her to reach the bottom of the hill, assuming she starts from rest and accelerates uniformly, if the elevation change (elevation is a measure of the vertical direction) is 150 m?



$\sin\theta = \frac{o}{h}$

$\sin 30^\circ = \frac{150}{\ell}$

$\ell = \frac{150}{\sin 30} = 300\text{m}$



$x_0 = 0$

$x = 300\text{m}$

$v_0 = 0$

$v =$

$a = 3.6\ \text{m/s}^2$

$t =$

$x = x_0 + v_0 t + \frac{1}{2}at^2$

$300 = \frac{1}{2}(3.6)t^2$

$t^2 = 166.67$

$t = 12.91\text{s}$