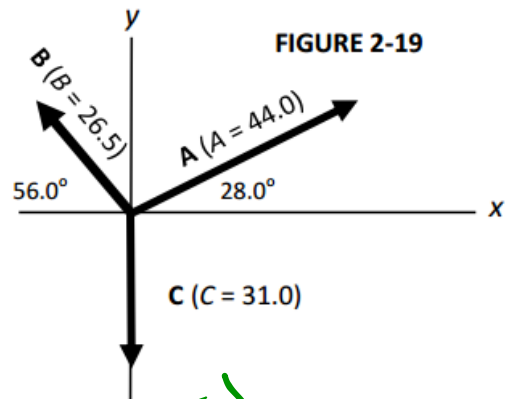8. Three vectors are shown in Figure 2-19; their magnitudes are given in arbitrary units.
Determine the sum of the three vectors. Give the resultant in terms of
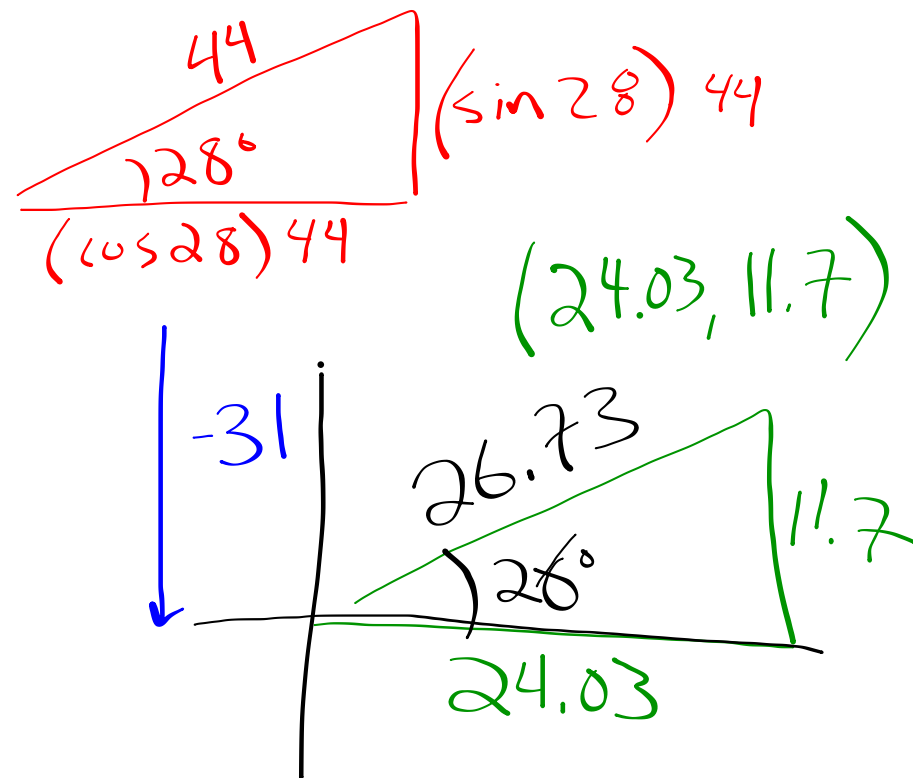   a) components.
   b) magnitude and angle with the x-axis.

FIGURE 2-19

B (B = 26.5)

A (A = 44.0)

56.0°

28.0°

C (C = 31.0)

44

)28°

$(\sin 28)\,44$

$(\cos 28)\,44$

$(\sin 56)\,26.5$

26.5

56°

$-(\cos 56)\,26.5$

-31

$(24.03, 11.7)$

26.73

)28°

11.7

24.03

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?

30°
no

$-1.8\frac{m}{s^2}$ 150m $3.6\frac{m}{s^2}$

30°

$3.12\frac{m}{s^2}$
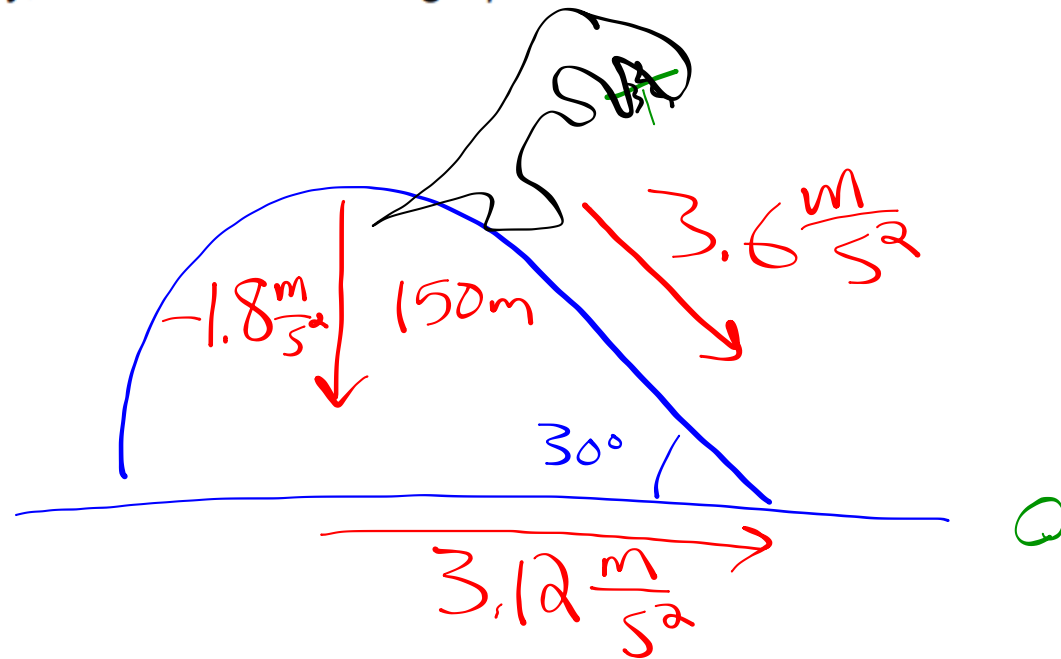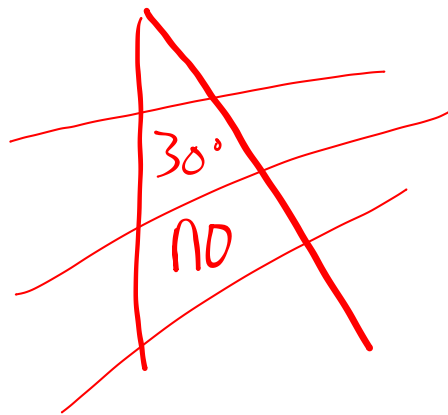
17. The summit of a mountain, 2150 m above a camp, is measured on a map to be 4750 m horizontally from the camp in a direction 28.2° west of due north. What are the components of the displacement vector from camp to summit? What is its length? Choose the x-axis east, y-axis north, and z-axis up.

2150

4750

θ

CAMP

− 2244.6

N

4186.2

4750

28.2°

E

Z

UP

2150

N

4750

CAMP

W

28.2°

S

X

E

Y

DOWN

$(-2244.6, 4186.2, 0)$

$(0, 0, 2150)$

$(-2244.6, 4186.2, 2150)$

5213.9 m