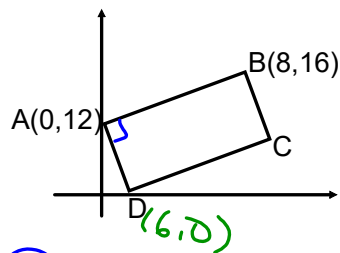


Analytic Geometry Problems

Find the area of the rectangle below.



① Slope AB:

$$a = \frac{16-12}{8-0} = \frac{4}{8} = \frac{1}{2}$$

② Slope AD = -2 (h)

$$\text{Since } a \cdot a' = -1$$

③ Equation of AD:

$$y = -2x + 12$$

(Since  $b = 12$ )④ Point D:  $(x, 0)$ 

$$0 = -2x + 12$$

$$\frac{2x}{2} = \frac{12}{2}$$

$$x = 6 \quad \therefore D(6, 0)$$

$$\begin{aligned} \textcircled{5} \quad d_{AB} &= \sqrt{(8-0)^2 + (16-12)^2} \quad A(0,12) \quad B(8,16) \\ &= \sqrt{8^2 + 4^2} \\ &= \sqrt{80} \\ &= 8.94 \text{ u} \end{aligned}$$

$$\begin{aligned} d_{AD} &= \sqrt{(6-0)^2 + (0-12)^2} \quad A(0,12) \quad D(6,0) \\ &= \sqrt{6^2 + (-12)^2} \\ &= \sqrt{180} \\ &= 13.42 \text{ u} \end{aligned}$$

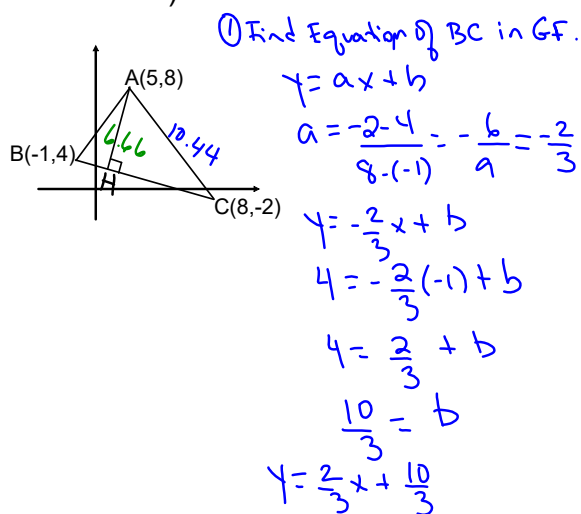
⑥

$$A = L \cdot w$$

$$= 8.94 \times 13.42$$

$$= 119.97 \text{ u}^2$$

2) Determine the length of segment  $\overline{HC}$  if  $\overline{AH}$  is an altitude of the triangle ABC. (Answer to the nearest tenth).



Now to GF:

$$y = -\frac{2}{3}x + \frac{10}{3}$$

$$\left(\frac{2}{3}x + y\right)^2 - \frac{10^2}{3^2} = 0 \cdot 3$$

$$2x + 3y - 10 = 0$$

② Find AH:  $a=2, b=3, c=-10$   
 $h=5, k=8$

$$d(p,r) = \frac{|2(5) + 3(8) - 10|}{\sqrt{2^2 + 3^2}}$$

$$= \frac{|24|}{\sqrt{13}}$$

$$= 6.66 \text{ u}$$

③ length  $\overline{AC}$ : A(5,8) C(8,-2)

$$d = \sqrt{(8-5)^2 + (-2-8)^2}$$

$$= \sqrt{3^2 + (-10)^2}$$

$$= \sqrt{109}$$

$$= 10.44 \text{ u}$$

④  $\overline{HC}$ :  $HC^2 = 10.44^2 - 6.66^2$   
 $HC = 8.04 \text{ u}$