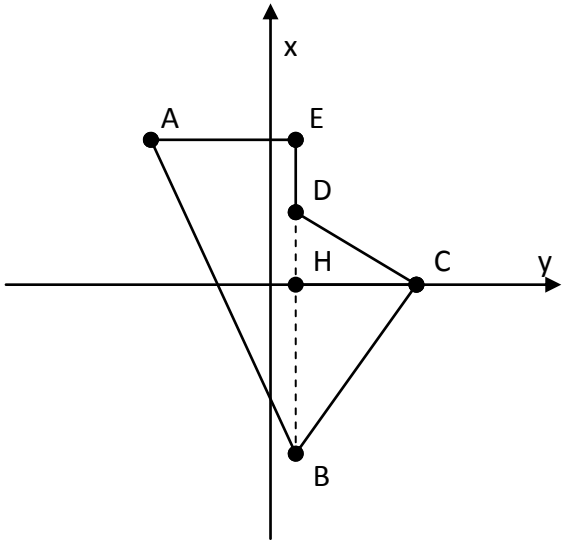
What is the area of pentagon ABCDE with vertices A(-5, 6), B(1, -7), C(6, 0), D(1, 3), E(1, 6)



Solution:

1). $x_E = x_D = x_B = 1$, so the points E, D and B are collinear points.

Hence

Area ABCDE = Area ABE + Area BCD.

2). $y_A = y_E = 6$, so AE is parallel y-axis

$x_B = x_E = 1$, so BE is parallel x-axis

Hence the triangle ABE is a right triangle and its area is

$$\text{Area ABE} = \frac{1}{2}(\text{AE} \times \text{EB})$$

$$AE = |x_A - x_E| = |-5 - 1| = 6$$

$$EB = |y_E - y_B| = |6 + 7| = 13$$

$$\text{Area ABE} = \frac{1}{2}(6 \times 13) = 39$$

3). The points D, H and B are collinear points, so $x_H = x_D = 1$

$$\text{Area BCD} = \frac{1}{2}(\text{BD} \times \text{CH})$$

$$CH = |x_C - x_H| = |6 - 1| = 5$$

$$BD = |y_B - y_D| = |-7 - 3| = 10$$

$$\text{Area ABE} = \frac{1}{2}(10 \times 5) = 25$$

Hence Area ABCDE = 25 + 39 = 64