

Formula for partitioning segments: $(x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1))$

8. Find the point T so that the directed line segment from A(1,2) to B(3,9) is partitioned into a ratio of 2:3. $\rightarrow \frac{2}{5}$

$$(1 + \frac{2}{5}(3-1), 2 + \frac{2}{5}(9-2)) = (1.8, 4.8)$$

9. Find the point T so that the directed line segment from A(-2,5) to B(4,-1) is partitioned into a ratio of 1:4. $\rightarrow \frac{1}{5}$

$$(-2 + \frac{1}{5}(4-(-2)), 5 + \frac{1}{5}(-1-5)) = (-.8, 3.8)$$

10. The point T is located three-fourths the distance from A(0,4) to B(-1,-1). Find the point T.

$$(0 + \frac{3}{4}(-1-0), 4 + \frac{3}{4}(-1-4)) = (-.75, .25) \quad (-.8, .3)$$

11. Find the coordinates of T that partition A(-9,5) to B(3,-1) into a 4:5 ratio. $\rightarrow \frac{4}{9}$

$$(-9 + \frac{4}{9}(3-(-9)), 5 + \frac{4}{9}(-1-5)) = (-3.7, 2.3)$$

12. Find the coordinates of T that partition A(9,-10) to B(1,0) into a 5:2 ratio. $\rightarrow \frac{5}{7}$

$$(9 + \frac{5}{7}(1-9), -10 + \frac{5}{7}(0-(-10))) = (3.3, -2.9)$$

13. A great steakhouse is $\frac{4}{5}$ of the way from Kaleb's to Dave's Doorknobs. Where is it?

$$(18, 4) \quad (12, 14)$$

$x_1 \quad y_1 \quad x_2 \quad y_2$

$$(18 + \frac{4}{5}(12-18), 4 + \frac{4}{5}(14-4)) = (13.2, 12)$$

14. The bowling alley is located $\frac{1}{2}$ of the way from Malik's to Kaleb's. How far will Bill have to travel to join them?

Malik = (3,1) } use midpoint formula
Kaleb = (18,4) } $(\frac{3+18}{2}, \frac{1+4}{2}) = (10.5, 2.5)$

② Use distance formula from Bill to Bowling Alley

Bill (10,6)

$$\sqrt{(10.5-10)^2 + (2.5-6)^2} = \sqrt{.25 + 12.25} = \sqrt{12.5} = 3.5 \text{ miles}$$

