

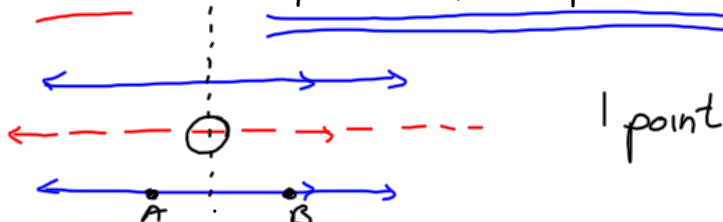
Geometry
Notes 14-2 Compound Loci

Compound loci are represented by the set of points that satisfy two or more conditions at the same time.

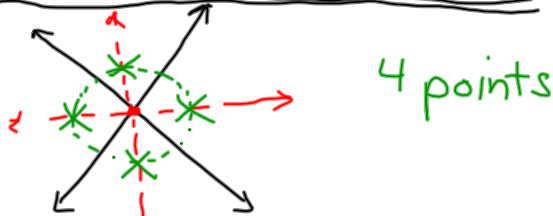
Procedure:

1. Draw the locus of points that satisfy the first condition.
2. Draw the locus of points that satisfy the second condition.
3. The point(s) of intersection of these loci are the point(s) satisfying both conditions.

Ex. 1: How many points are there that are equidistant from 2 parallel lines and also equidistant from 2 points on one of the lines?

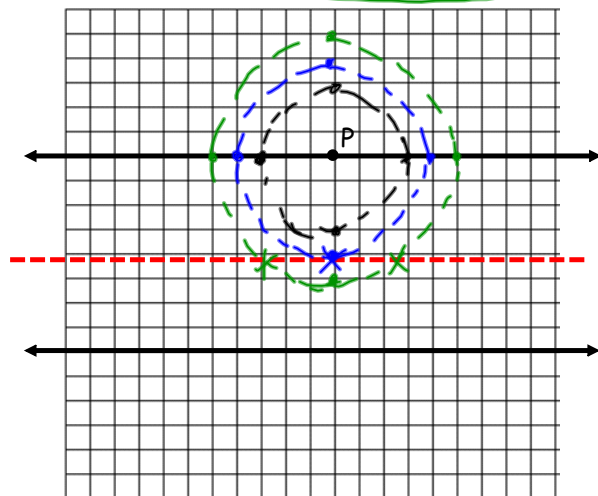


Ex. 2. How many points are there, that are equidistant from 2 intersecting lines and also 2 units from their point of intersection?

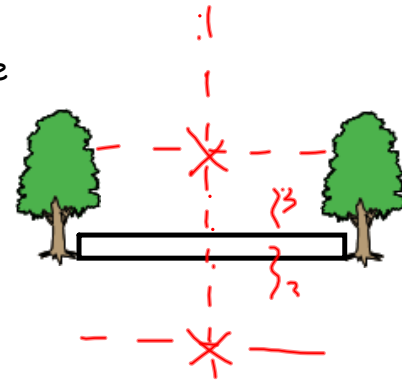


Ex. 3 Two parallel lines are 8 inches apart. Point P is located on one of the lines. Find the number of points that are equidistant from the parallel lines and also at a distance from point P of:

- a. 5 inches 2
- b. 4 inches 1
- c. 3 inches 0

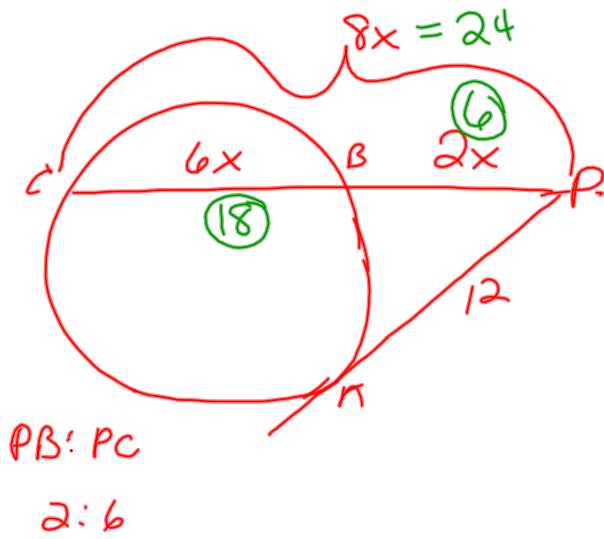


Ex. 4. Steve has a treasure map, represented in the diagram, that shows two trees 8 feet apart and a straight fence connecting them. The map states that the treasure is buried 3 feet from the fence and equidistant from the two trees. Find the possible spots the treasure could be buried.



Homework: Draw a diagram to solve each of the following compound locus problems. Clearly indicate the solution.

1. Given point P on a line. Find the total number of points that are at a distance of 4 cm. from P and also at a distance of 3 cm. from the given line is.
2. What is the total number of points that are 3 in. from a given line and also 3 in. from a given point on this line?
3. Given point P on line \overleftrightarrow{AB} . What is the total number of points that are at a distance of 4 cm. from line \overleftrightarrow{AB} and also a distance of 10 cm. from point B?
4. Given line m. What is the number of points that are at a distance of 4 cm. from m and also equidistant from two points A and B on line m?
5. What is the total number of points that are equidistant from two intersecting lines m and n and also 3 inches from line m?
6. Find the total number of points that are equidistant from two intersecting lines and also 5 inches from their point of intersection.
7. Point P is 8 cm from \overleftrightarrow{AB} . How many points are 6 cm. from point P and also 3 cm. from \overleftrightarrow{AB} ?
8. Point A is 9 in. from a given straight line. How many points are both 4 in. from this line and 5 in. from A?
9. A treasure map shows a treasure hidden in a park near a tree and a statue. The map indicated that the tree and the statue are 10 feet apart. The treasure is buried 7 feet from the base of the tree and also five feet from the base of the statue. How many places are possible locations for the treasure to be buried? Draw a diagram of the treasure map, and indicate with an X each possible location of the treasure?



$$\tan^2 = \text{outside} \cdot \text{whole}$$

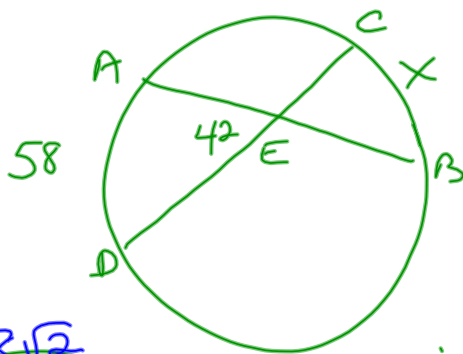
$$12^2 = 2x \cdot 8x$$

$$\frac{144}{16} = \frac{16x^2}{16}$$

$$9 = x^2$$

$$\pm 3 = x$$

$$x = 3$$

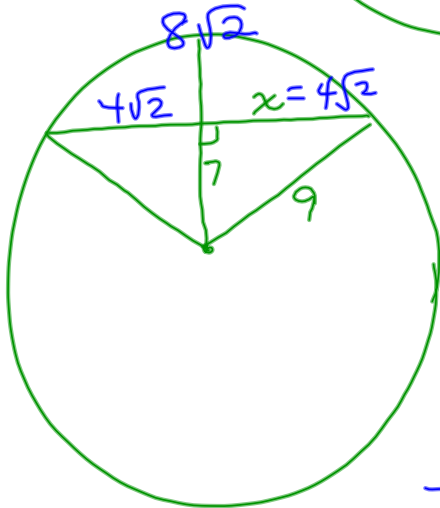


$$m \angle AED = \frac{1}{2} (\widehat{AD} + \widehat{BC})$$

$$42 = \frac{1}{2} (58 + x)$$

$$84 = 58 + x$$

$$\begin{array}{r} -58 \\ -58 \\ \hline 26 = x \end{array}$$



$$x^2 + 7^2 = 9^2$$

$$x^2 + 49 = 81$$

$$\begin{array}{r} -49 \\ -49 \\ \hline x^2 = 32 \end{array}$$

$$x = \pm \sqrt{32} = \frac{\sqrt{16} \sqrt{2}}{4\sqrt{2}}$$

