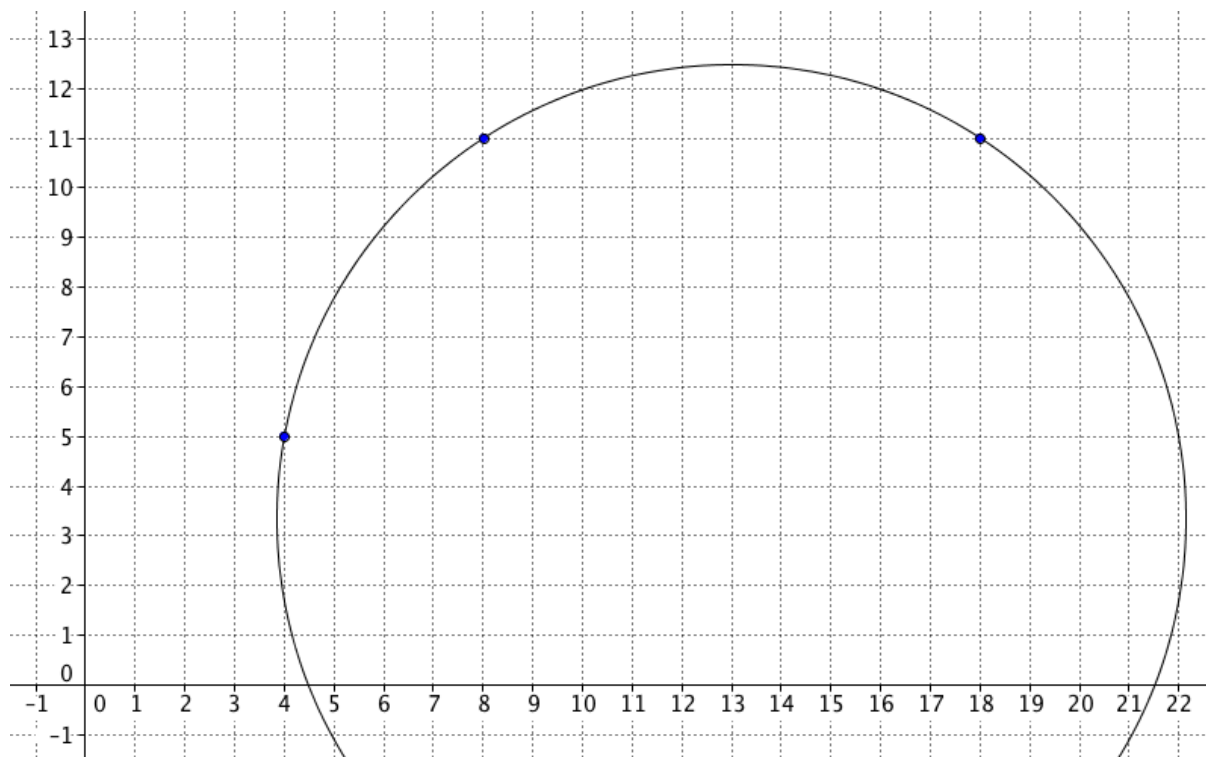


Centre of a Circle From Three Points

Yesterday we located the centre of a circle using both endpoints of its diameter.
(All diameter line segments intersect at the same point.)

Today we will locate the centre of a circle when we do not know both endpoints of its diameter.

Example – Determine the centre of the following circle geometrically, based on the given information.

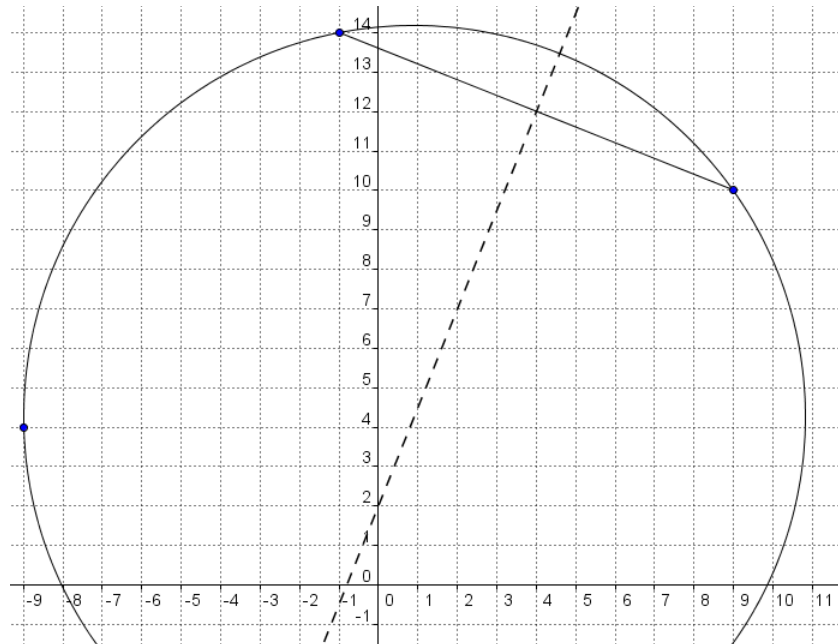


A chord is a line segment that connects two points on the circumference of a circle.

A right bisector is a perpendicular line through the midpoint of a line segment.

The right bisectors of any two chords on a circle intersect at the centre of the circle.

Example – Determine the centre of the following circle algebraically, based on the given information.



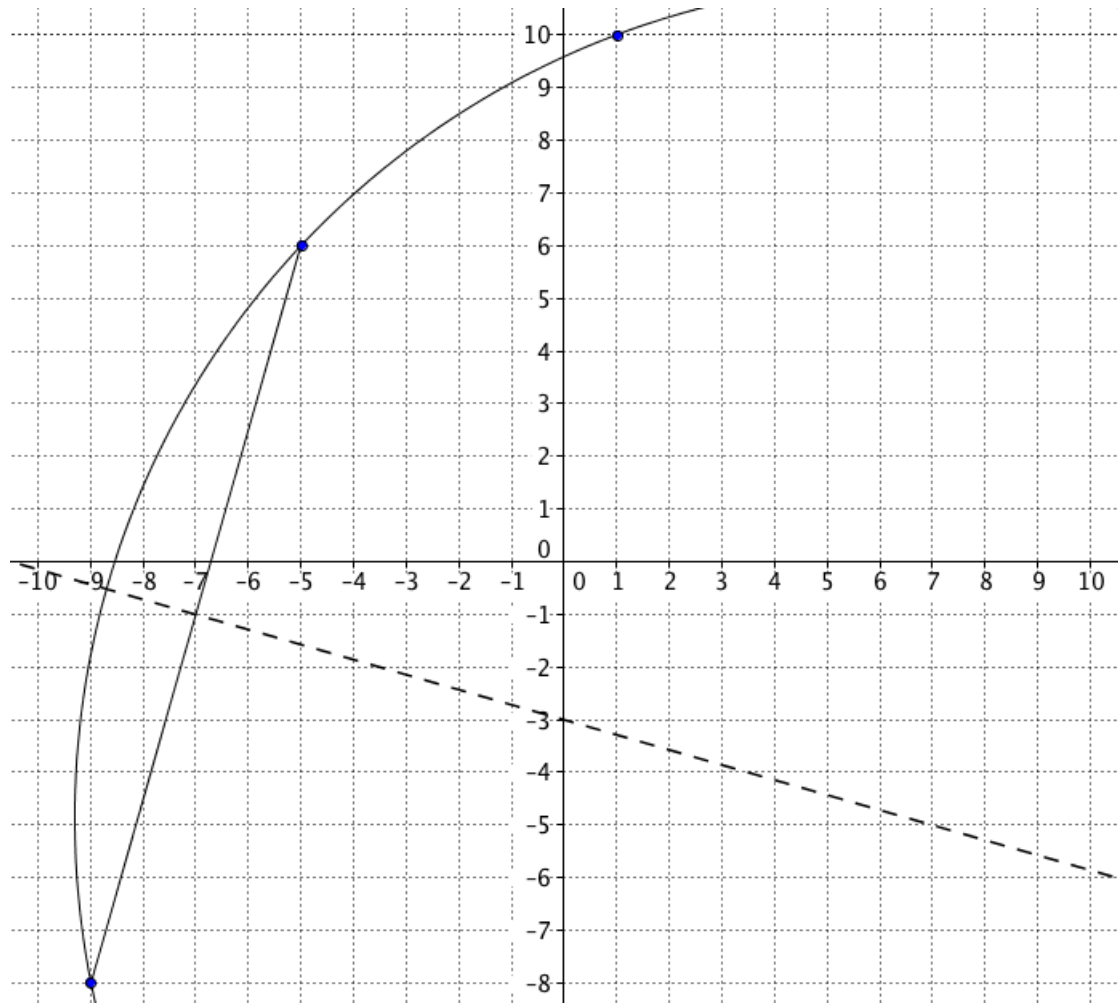
Steps for determining the centre of a circle using three points on the circumference:

1. Determine the equation of a right bisector using the midpoint of a chord and the slope perpendicular to the chord.
2. Determine the equation of another right bisector using a different chord.
3. Solve for the point of intersection of the two right bisectors.

Example – Determine the centre of the circle that passes through the points A $(-6, 4)$, B $(-10, -12)$ and C $(11, -5)$.

Homework: Please solve the following three problems.

1. Determine the centre of the following circle algebraically, based on the given information.

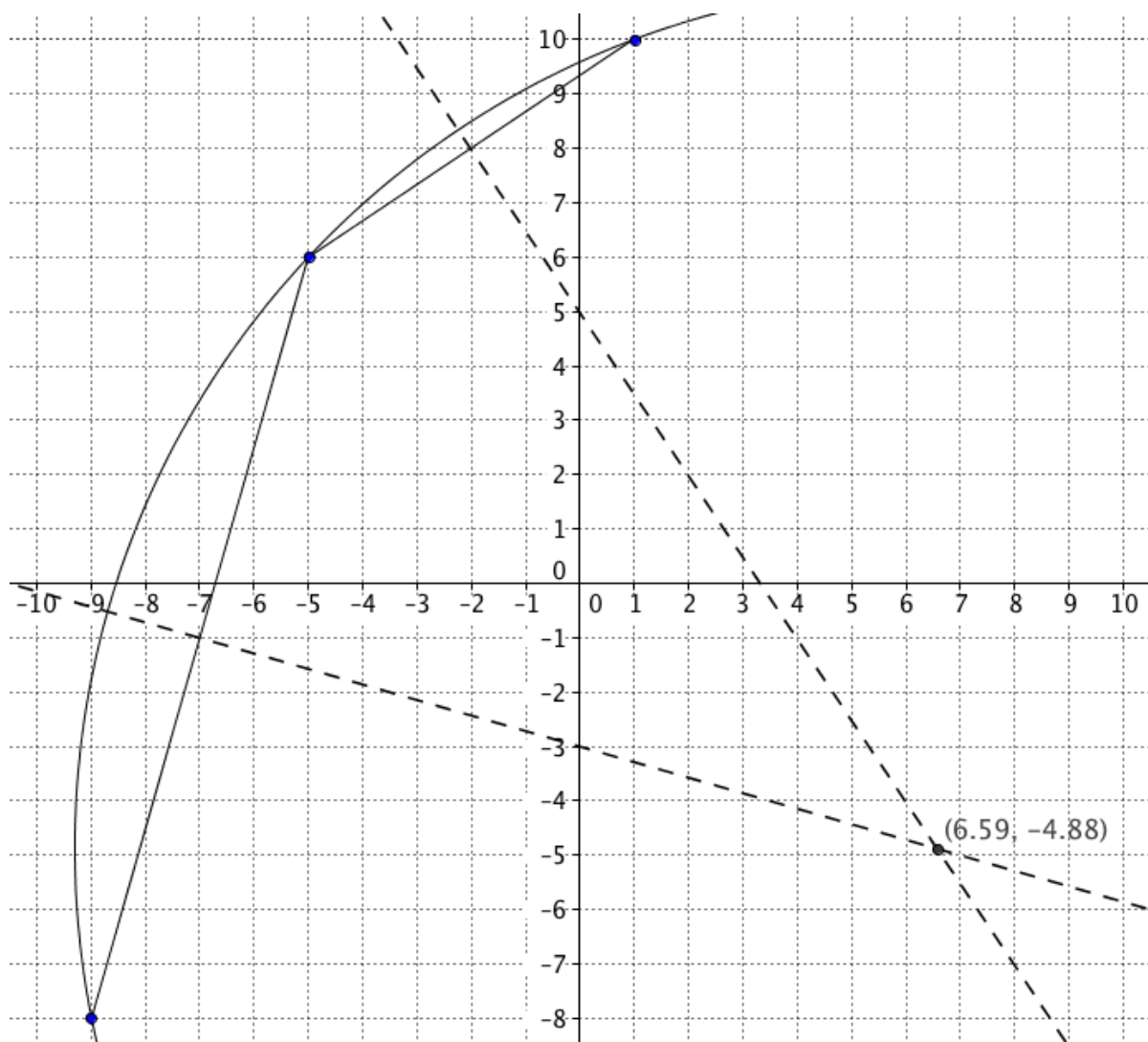


2. Determine the centre of the circle that passes through the points D $(-9, -4)$, E $(6, 1)$ and F $(-2, 17)$.

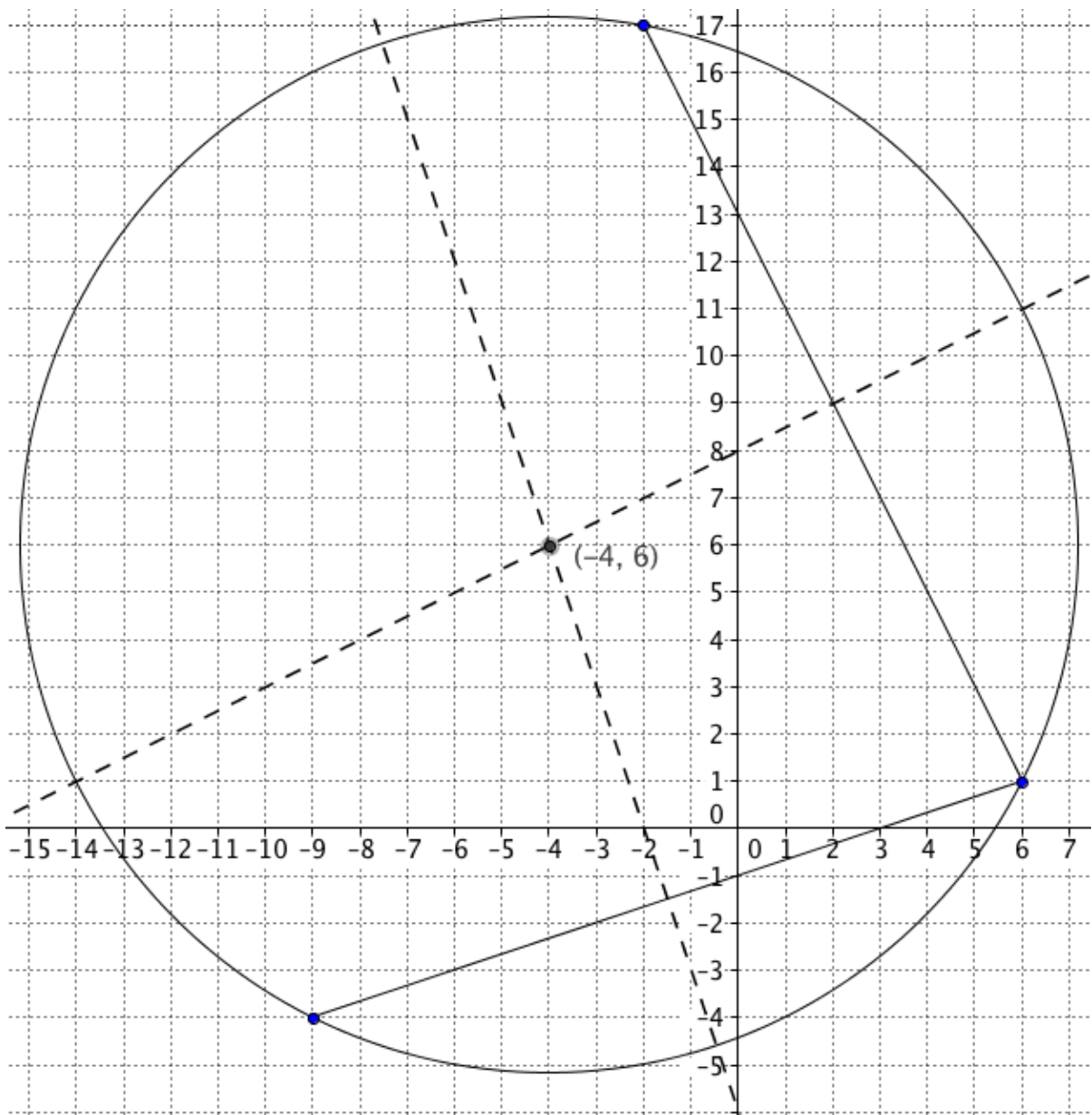
3. Determine the centre of the circle that passes through the points P (15, -5), Q (9, 7) and R (-6, 4).

Answers:

1. The centre of the circle is at $(6.59, -4.88)$.



2. The centre of the circle is at $(-4, 6)$.



3. The centre of the circle is at $(3.27, -3.36)$.

