Let $M$ be a given circle, and let $ABC$ be a triangle inscribed in it.

(a) $AB$, $BC$, $CA$ are the sides of the triangle.
(b) $O$ is the center of the circle.
(c) $H$ is the orthocenter of the triangle.

From the above, we can deduce that $O$ is the orthocenter of the triangle $ABC$.

The problem is to prove that $O$ is the orthocenter of the triangle $ABC$.

To do this, we can use the fact that the orthocenter of a triangle is the point where the three altitudes of the triangle intersect.

Let $AD$, $BE$, and $CF$ be the altitudes of the triangle $ABC$.

We know that $AD$, $BE$, and $CF$ are perpendicular to $BC$, $CA$, and $AB$, respectively.

Therefore, $AD$, $BE$, and $CF$ are the altitudes of the triangle $ABC$.

Hence, $O$ is the orthocenter of the triangle $ABC$. 

Let $x$, $y$, and $z$ be the lengths of the sides $BC$, $CA$, and $AB$, respectively.

Using the Law of Cosines, we can find the lengths of the sides of the triangle $ABC$.

The law of cosines states that $c^2 = a^2 + b^2 - 2ab \cos C$, where $a$, $b$, and $c$ are the lengths of the sides of the triangle, and $C$ is the angle opposite side $c$.

Using this formula, we can find the lengths of the sides of the triangle $ABC$.

Finally, we can use the fact that the orthocenter of a triangle is the point where the three altitudes of the triangle intersect to prove that $O$ is the orthocenter of the triangle $ABC$. 

The proof is complete.
\[ \text{Suppose } \langle a, b \rangle \in M \cap H(a, b) \text{ then } a, b \in M. \]

- Density: \( X \subseteq \text{weight } a \cap X \setminus \{a\} \Rightarrow X \subseteq \text{SM.} \)

- If \( X \cap H(a) \) and if \( a \in \text{sm} (X, \Omega) \)

Claim: \( X \cap M \) is an open box of \( X \cap M \) (considered as a subspace of \( X \)).

- Suppose that \( X \subseteq X \cap M \) and \( a \in \Omega \).

\[ \text{We have to show that there is some } C \subseteq X \cap M \text{ a t. } \]

\( a \in \text{sm}(a, C) \subseteq \text{sm}(X, \Omega) \),

This \( \Omega \) is an \( \Omega \).

1. \( x \in M \cap H(x), (X \cap M) \) is open.

2. \( (X \cap M) \) is open.

3. \( X \subseteq X \cap M \) is open.

Let \( C \subseteq M \cap H(a, b) \) and \( M \) is \( \Omega \).

4. \( X \subseteq X \cap M \) is open.

Since \( M \) is \( \Omega \) then there is some \( C \subseteq X \cap M \) such that \( x \in X \cap M \).

Now \( x \subseteq X \cap M \) is \( \Omega \).

Since \( \Omega \) is a \( \Omega \)-open box of \( X \),

then \( x \subseteq X \cap M \) is a \( \Omega \)-open box of \( X \cap M \).

Now \( x \subseteq X \cap M \) is a \( \Omega \)-open box of \( X \cap M \).

\[ \text{Note } 0 \notin M \}, \text{BM.} \]