5^{th} exercise:

1) a) In $\triangle ABE$ we have:

O is center of circle (C) with diameter [AB] (Given)

→ then, O is midpt of [AB].

E is symmetric of A w.r.t M. (Given)

→ then, M is midpt of [AE]

Thus, (OM) // (EB) (by midpt theorem in a $\triangle$).

b). M is a pt on (C) (Given).

[AB] is a diameter of (C) (Given).

then, $A\hat{M}B = 90°$ (Inscribed angle facing diameter)

hence, [BM) is a height relative to [AE].

But, M is midpt of [AE] (proved)

Thus, [BM) is the perp. bisector of [AE] (height passing through midpt of a segment).

c) [BM) is perp bisector of [AE] (proved)

then, BA = BE

but, BA = 6cm (given fixed)

Thus, As M varies on (C) E describes a circle of center B and radius BE = 6cm.

2a). In $\triangle$'s IBE & ION we have:

→ $B\hat{I}E = O\hat{I}N$ (vertically opp. angles btw 2 parallel st. lines).

(MO) // (EB) (proved)

then, (ON) // (EB) (segments of parallel are parallel).

→ hence, $O\hat{N}I = I\hat{E}B$ (alternating interior angles btw 2 parallel lines)

Thus, $\triangle$'s IBE & ION are similar by A.A postulate.

11/12