2nd exercise:

Part A:

1- $EA = 3\sqrt{2}(\sqrt{3}+1) + (\sqrt{2}-1)(\sqrt{2}-2) - 4$

$= 3\sqrt{6} + 3\sqrt{2} + 2 - 2\sqrt{2} - \sqrt{2} + 2 - 4$

$EA = 3\sqrt{6}$ cm

where $a = 3$ & $b = 6$

2- $*AB = 8\sqrt{6} - 2\sqrt{3} \times \sqrt{2} + 2\sqrt{150}$

$= 8\sqrt{6} - 2\sqrt{6} + 2\sqrt{5^2 \times 6}$

$= 8\sqrt{6} - 2\sqrt{6} + 10\sqrt{6}$

$AB = 16\sqrt{6}$

$[AB]$ is a diameter of (C) of center O (given)

then $R = \frac{AB}{2}$

$= \frac{16\sqrt{6}}{2}$

$R = 8\sqrt{6}$ cm

3- $* EO = EA + AO$ (E belongs to $[OA]$)

$= 3\sqrt{6} + 8\sqrt{6}$

$EO = 11\sqrt{6}$ cm

In ΔEPO:

Apply converse of pythagorean theorem:

$hyp^2 \overset{?}{=} leg_1^2 + leg_2^2$

$EO^2 \overset{?}{=} OP^2 + EP^2$

$(11\sqrt{6})^2 \overset{?}{=} (8\sqrt{6})^2 + (3\sqrt{38})^2$

$726 \overset{?}{=} 384 + 342$

$726 = 726$

So, EPO is right Δ at P

hence, (EP) and $[OP]$ are perp. at P