

9-2 COMMON TANGENT HW

① $AC=24$ ② $AB=12$ ③ $CD=13$ ④ $ED=26$

⑤ $ED=10$; No, not tangent.

⑥ $EF=41$

⑦ $AB=6\sqrt{10}$

⑧ $6\sqrt{10} + 6 + 21 + 15$

$$9^2 + x^2 = 21^2$$

$$81 + x^2 = 441$$

$$x^2 = 360$$

$$x = 6\sqrt{10}$$

$$42 + 6\sqrt{10}$$

⑨ $5^2 + x^2 = 13^2$

$$x = 12$$

$$ST = 12$$

⑩ $3^2 + x^2 = 8^2$

$$x^2 = 55$$

$$ST = \sqrt{55}$$

⑪ $6^2 + x^2 = 9^2$

$$x^2 = 45$$

$$ST = 3\sqrt{5}$$

⑫ $x^2 + 15^2 = 17^2$

$$x = 8$$

$$US = 12\frac{1}{2}$$

⑬ $x^2 + 24^2 = 25^2$

$$x = 7$$

$$VT = 9$$

⑭ $\frac{4}{15} = \frac{5}{8}$

$$8y = 75$$

$$y = \frac{75}{8}$$

$$PB = \frac{75}{8}$$

⑮ $\frac{5}{8} = \frac{x+5}{17}$

$$85 = 8x + 40$$

$$45 = 8x$$

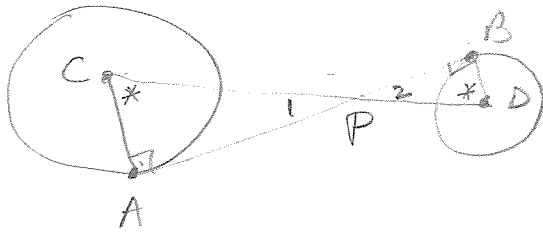
$$PD = \frac{45}{8}$$

⑯ $AB = 15 + \frac{75}{8}$

$$= \frac{120}{8} + \frac{75}{8}$$

$$AB = \frac{195}{8}$$

17



① \overline{AB} is common tangent. \rightarrow ② $\overline{CA} \perp \overline{AB}$ \rightarrow ③ $\sphericalangle CAP$ is right $\left. \begin{array}{l} \overline{BD} \perp \overline{AB} \\ \sphericalangle DBP \text{ is rt.} \end{array} \right\}$

④ $\sphericalangle CAP \cong \sphericalangle DBP$
 ⑤ $\sphericalangle 1 \cong \sphericalangle 2$ \rightarrow ⑥ $\triangle PCA \sim \triangle PDB \rightarrow$ ⑦ $\sphericalangle PCA \cong \sphericalangle PDB$

① Given

② A tan is \perp to radius of \odot .

③ \perp lines form rt \sphericalangle s.

④ All rt \sphericalangle s \cong .

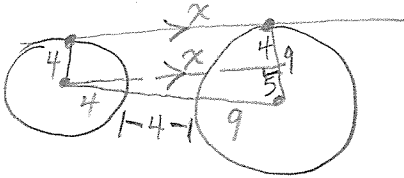
⑤ Vertical \sphericalangle s \cong .

⑥ AA \sim AA

⑦ In $\sim \triangle$ s,

Corresp. \sphericalangle s \cong .

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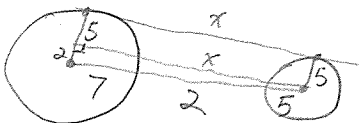
$$5^2 + x^2 = 17^2$$

$$x = \sqrt{264}$$

$$x = 2\sqrt{66}$$

$x = \text{length of common ext. tang.} = \boxed{2\sqrt{66}}$

19



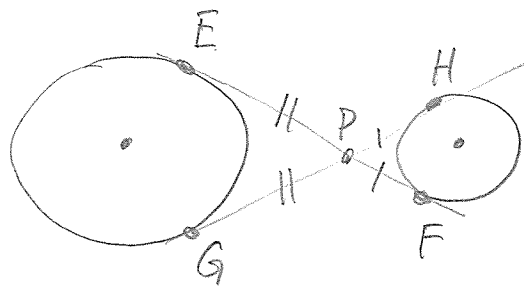
$$2^2 + x^2 = 14^2$$

$$x = \sqrt{192}$$

$x = \text{length of common ext. tang.}$

$$\boxed{x = 8\sqrt{3}}$$

20



① \overline{EP} & \overline{GH} are common \rightarrow ② $\overline{PE} \cong \overline{PG}$
 internal tangents $\overline{PH} \cong \overline{PF}$ } \rightarrow ③ $\overline{EP} + \overline{PF} \cong \overline{HP} + \overline{PG}$

④ $EP + PF = HP + PG$
 ⑤ $EP + PF = EF$
 $GP + PH = GH$ } \rightarrow ⑥ $EF = GH \rightarrow$ ⑦ $\overline{EF} \cong \overline{GH}$

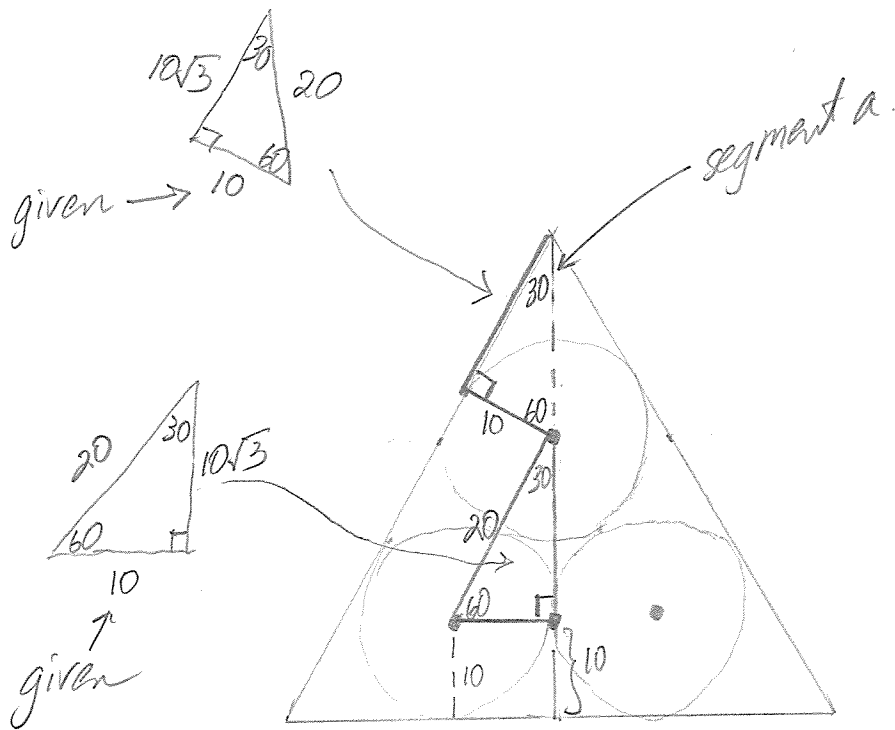
- ① Given
- ② 2 tangs from ext. pt of \odot are \cong .
- ③ Add. property
- ④ def of \cong seg.
- ⑤ Seg. Add. Post.
- ⑥ Substitution
- ⑦ Def of \cong seg.

21 ① \overline{AB} & \overline{CD} are \rightarrow ② $\overline{PA} \cong \overline{PC} \rightarrow$ ④ $PA = PC$
 common ext. tangents \rightarrow ③ $\overline{PB} \cong \overline{PD} \rightarrow$ ⑤ $PB = PD$

⑥ $PA - PB = PC - PD$
 ⑦ $PA = PB + AB$
 $PC = PD + CD$ } \rightarrow ⑧ $AB = CD \rightarrow$ ⑨ $\overline{AB} \cong \overline{CD}$

- ① Given
- ② 2 tangents from same ext. pt. of \odot are \cong .
- ③ same as #2
- ④ def of \cong seg.
- ⑤ same as #4
- ⑥ Subtraction Prop.
- ⑦ Seg. Add. Post.
- ⑧ Substitution
- ⑨ Def of \cong seg.

24

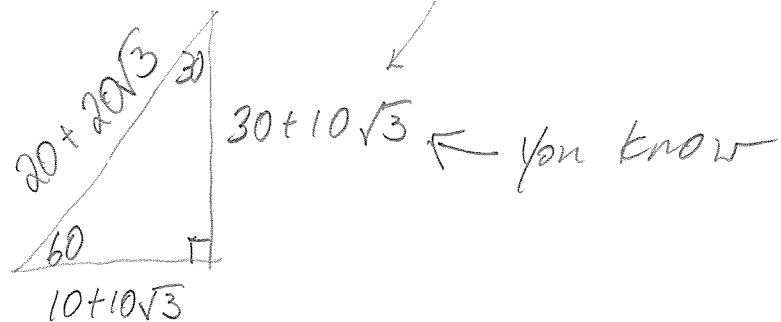


Segment a is \perp bisector to equilateral Δ .

① Use 30-60-90 Δ s to find parts of segment a .

$$\begin{aligned} \text{Segment } a &= 20 + 10\sqrt{3} + 10 \\ &= 30 + 10\sqrt{3} \end{aligned}$$

② Use half of large Δ . You get a 30-60-90 Δ .



Answer: one side of original $\Delta = 20 + 20\sqrt{3}$ cm!