ADD'L PROOF PRACTICE FOR MIDTERM (Answer Key)

Ⅰ ① $\overleftrightarrow{RP} \perp \overleftrightarrow{OP}$ → ② ∡3 comp ∡5; ③ ∡1 comp ∡4, ∡4 ≅ ∡5 → ④ ∡1 ≅ ∡3; ⑤ ∡1 ≅ ∡2 → ⑥ ∡2 ≅ ∡3

① Given
② If exterior sides of 2 acute adjacent ∡s ⊥, then complement ∡s are formed.
③ Given
④ ≅ Complements thm
⑤ Given
⑥ Transitive or substitution

Ⅱ ① ∡5 & ∡6 linear pair → ② ∡5 supp ∡6; ∡9 & ∡10 linear pair → ∡9 supp ∡10; ③ ∡5 ≅ ∡10 → ④ ∡6 ≅ ∡9; ⑤ ∡7 ≅ ∡8; ⑥ $\overline{AC} \cong \overline{CE}$ → ⑦ △ABC ≅ △EDC → ⑧ ∡B ≅ ∡D

① Def of linear pair
② Linear pair postulate
③ Given
④ ≅ supp thm
⑤ Vertical ∡s ≅.
⑥ Given
⑦ ASA ≅ ASA
⑧ CPCTC

Ⅲ ① $\overline{BA} \cong \overline{BF}$ → ② BA = BF; ③ BA = BE + EA, BF = BC + CF → ④ BE + EA = BC + CF; ⑤ $\overline{FC} \cong \overline{AE}$ → ⑥ FC = AE → ⑦ BE + AE = BC + AE → ⑧ BE = BC → ⑨ $\overline{BE} \cong \overline{BC}$

⑩ ∡1 & ∡BCE linear pair → ⑪ ∡1 supp ∡BCE; ∡2 & ∡BED linear pair → ∡2 supp ∡BED; ⑫ ∡1 ≅ ∡2 → ⑬ ∡BCE ≅ ∡BED

⑭ $\overline{AB} \perp \overline{CD}$ → ⑮ ∡CBE ≅ ∡EBD

⑯ △ABC ≅ △DBE

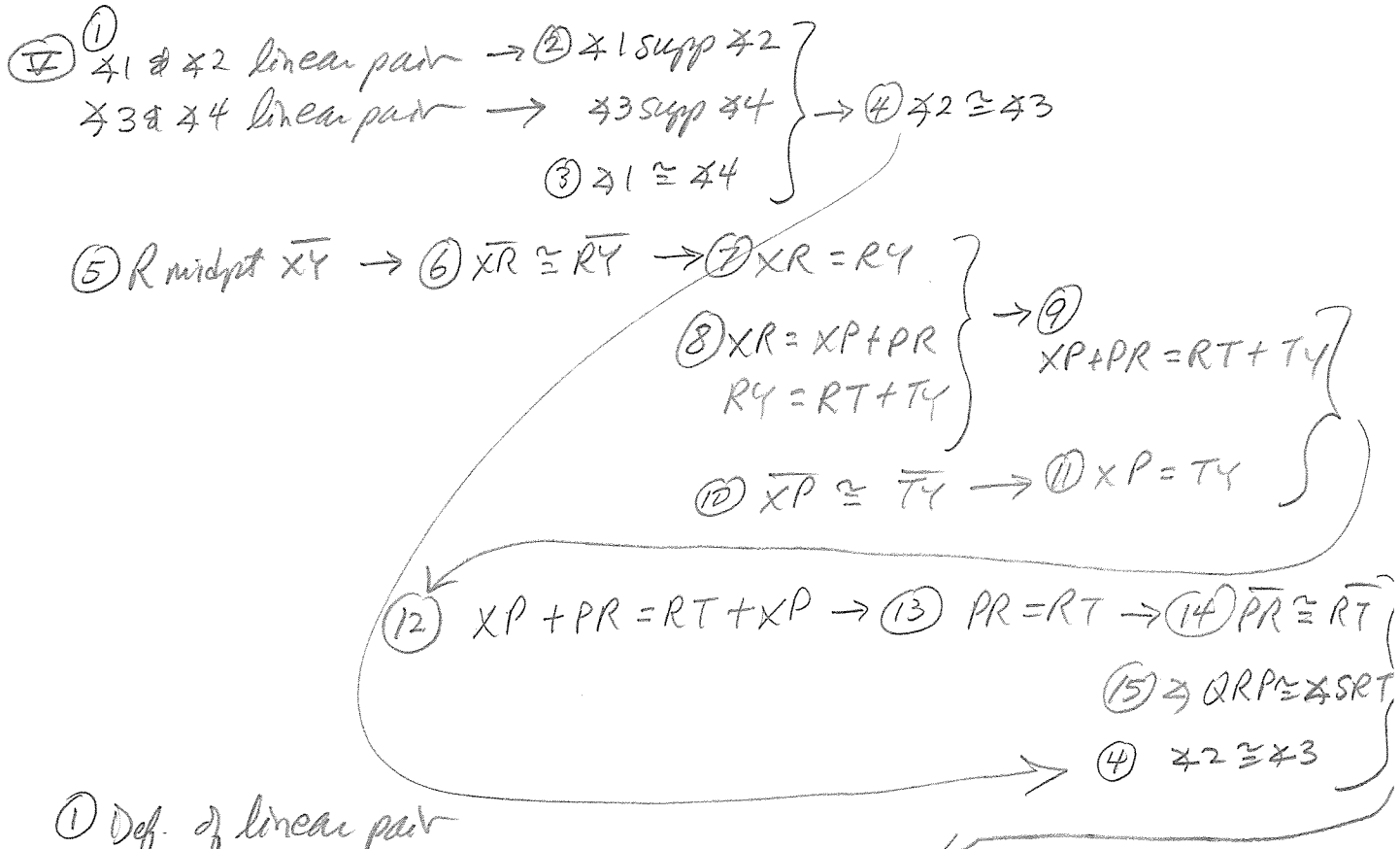
(III) continued...

1. Given
2. def. of ≅ segments
3. Segment addition post.
4. Substitution
5. Given
6. Def of ≅ segments
7. Substitution
8. Subtraction
9. Def of ≅ segments
10. Def of linear pair
11. Linear pair postulate
12. Given
13. ≅ Supp. Thm
14. Given
15. If lines ⊥, then they form 2 ≅ adjacent ∠s.
16. ASA ≅ ASA

(IV)

(1) $\overline{BD} \perp \overline{CD}$ → (2) ∠BCD is Rt. ∠
$\overline{BD} \perp \overline{BA}$ → ∠ABD is Rt. ∠
→ (3) ∠BCD ≅ ∠ABD
(4) $\overline{AB} \cong \overline{CD}$
(5) $\overline{BD} \cong \overline{BD}$
→ (6) $\triangle ABD \cong \triangle CDB$ → (7) ∠A ≅ ∠C

1. Given
2. ⊥ lines form Rt. ∠s
3. All right ∠s ≅.
4. Given
5. Reflexive prop.
6. SAS ≅ SAS
7. CPCTC



(1) Def. of linear pair
(2) Linear pair postulate
(3) Given
(4) ≅ Suppl. Thm
(5) Given
(6) Def of midpoint
(7) Def of ≅ segmts
(8) Segment addition post.
(9) Substitution
(10) Given
(11) Def of ≅ segments
(12) Substitution
(13) Subtraction Prop.
(14) Def of ≅ segmts
(15) Vertical ∠s ≅
(16) ASA ≅ ASA

VI

① B midpt of $\overline{AC}$ → ② $BC = \frac{1}{2}AC$ →
H midpt of $\overline{AF}$ → $HF = \frac{1}{2}AF$ →
③ $\overline{AC} \cong \overline{AF}$ → ④ $AC = AF$ → ⑤ $\frac{1}{2}AC = \frac{1}{2}AF$
→ ⑥ $BC = HF$ → ⑦ $\overline{BC} \cong \overline{HF}$

⑧ $\overline{CD} \cong \overline{EF}$ → ⑨ $\overline{CE} \cong \overline{DF}$

⑩ $\angle C \cong \angle F$

⑪ $\triangle CBE \cong \triangle FHD$ → ⑫ $\overline{BE} \cong \overline{HD}$ → ⑬ $BE = HD$

⑭ $\frac{1}{2}BE = \frac{1}{2}HD$

⑮ J midpt $\overline{BE}$ → ⑯ $BJ = \frac{1}{2}BE$
J midpt $\overline{HD}$ → $JH = \frac{1}{2}DH$
→ ⑰ $BJ = JH$

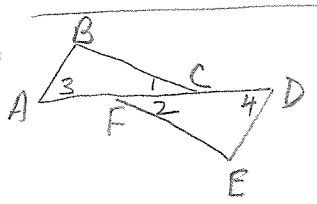
⑱ $\overline{BJ} \cong \overline{JH}$

① Given
② Midpt Thm
③ Given
④ Def of ≅ seg.
⑤ Division prop.
⑥ Substitution
⑦ Def of ≅ seg.
⑧ Given
⑨ Common Seg. Thm
⑩ Given
⑪ SAS ≅ SAS
⑫ CPCTC
⑬ Def of ≅ seg.
⑭ Division prop
⑮ Given
⑯ Midpt Thm
⑰ Substitution
⑱ Def of ≅ seg.

VII ① $\angle ABE \cong \angle ADE$ → ② $\overline{AD} \cong \overline{AB}$, ③ $\overline{BC} \cong \overline{DC}$, ④ $\overline{AC} \cong \overline{AC}$ → ⑤ $\triangle ADC \cong \triangle ABC$

⑥ $\angle DAE \cong \angle BAE$, ⑦ $\angle ABE \cong \angle ADE$, ⑧ $\overline{AD} \cong \overline{AB}$ → ⑨ $\triangle DAE \cong \triangle BAE$ → ⑩ $\angle AED \cong \angle AEB$ → ⑪ $\overline{AC} \perp \overline{BD}$

① Given
② If 2 $\angle$s of $\triangle \cong$, sides opp $\cong$.
③ Given
④ Reflexive
⑤ SSS $\cong$ SSS
⑥ CPCTC
⑦ Given
⑧ See #2
⑨ ASA $\cong$ ASA
⑩ CPCTC
⑪ If 2 lines form $\cong$ adjacent $\angle$s, then lines are $\perp$.

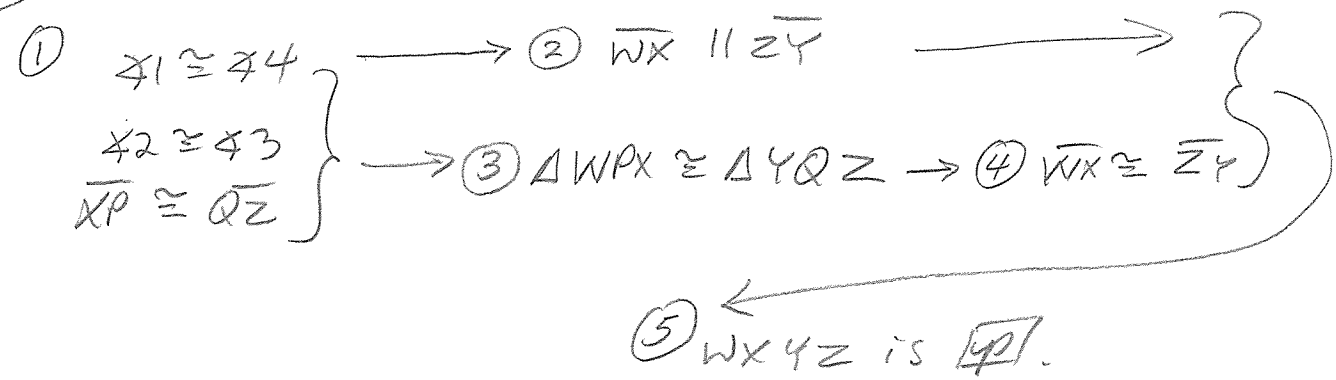
VIII 

Prove $\triangle ABC \cong \triangle DEF$.
Must show $\angle 1 \cong \angle 2$ to get $\overline{BC} \parallel \overline{FE}$.

① $\overline{AB} \parallel \overline{DE}$ → ② $\angle 3 \cong \angle 4$
③ $\overline{AF} \cong \overline{DC}$ → ④ $\overline{AC} \cong \overline{FD}$
⑤ $\overline{AB} \cong \overline{DE}$
→ ⑥ $\triangle ABC \cong \triangle DEF$ → ⑦ $\angle 1 \cong \angle 2$ → ⑧ $\overline{BC} \parallel \overline{FE}$

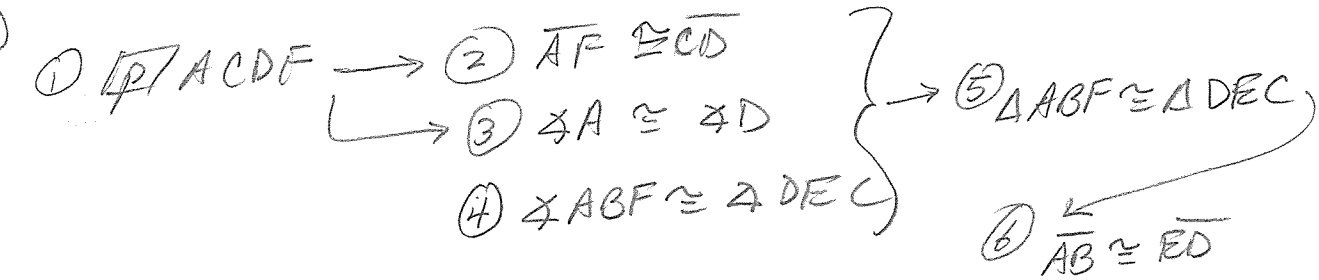
① Given
② 2 $\parallel$ lines → alt. int. $\angle$s $\cong$.
③ Given
④ Common segments thm
⑤ Given
⑥ SAS $\cong$ SAS
⑦ CPCTC
⑧ If lines form 2 $\cong$ alt. int. $\angle$s → 2 $\parallel$ lines.

IX



① Given
② 2 lines form ≅ alt. int ∠s → ∥ lines.
③ ASA ≅ ASA
④ CPCTC
⑤ If 1 pair of sides ∥ & ≅ → ▱.

X



① Given
② ▱ → opp sides ≅.
③ ▱ → opp ∠s ≅.
④ Given
⑤ AAS ≅ AAS
⑥ CPCTC