

## Geometry Homework #21

- 1) Given:  $\overline{AB} \perp \overline{AD}, \overline{CD} \perp \overline{DA}, \overline{AB} \cong \overline{DC}, \overline{AC}$  and  $\overline{DB}$  intersect at point E  
 Prove:  $\overline{BE} \cong \overline{CE}$
- 2) If the equation of a circle is  $(x - 6)^2 + (y - 7)^2 = 121$ , determine its diameter and center.
- 3) Given:  $\overline{AD} \text{ P } \overline{BC}, \overline{AB} \text{ P } \overline{DC}$   
 Prove:  $\angle ABC \cong \angle CDA$
- 4) If the equation of an ellipse is  $\frac{(x+12)^2}{169} + \frac{(y+9)^2}{49} = 1$ , determine the center and the length of the minor and major axes.
- 5) Given:  $\triangle CFB, \overline{AB} \text{ P } \overline{CD}, \overline{FC} \perp \overline{AB}, \overline{GE} \perp \overline{CB}$ , point G is between A and B, point E is between C and B, point E is between G and D, point A is between F and C, E is the midpoint of  $\overline{CB}$ ,  $\overline{AG} \cong \overline{GE}$   
 Prove:  $\overline{CD} \cong \overline{FG}$
- 6) Given:  $\triangle ABD$  and  $\triangle CBD, \overline{AD} \text{ P } \overline{BC}$ .  $\overline{AB}$  is not congruent to  $\overline{CD}$ ,  $\overline{AC}$  and  $\overline{BD}$  do not intersect  
 Prove:  $\overline{BC}$  is not congruent to  $\overline{DA}$
- 7) Given:  $\triangle ABC$  and  $\triangle CDA$ , Point E is between A and C, point E is between B and D,  $\overline{AC}$  and  $\overline{BD}$  intersect at point E,  $\angle ACB$  is not congruent to  $\angle DAC$   
 Prove:  $\angle ADB$  is not congruent to  $\angle CBD$
- 8) Given:  $\triangle BDC$ , point B is between A and C,  $\overline{BC} \cong \overline{BD}$ ,  $\overline{AB}$  is not congruent to  $\overline{BD}$   
 Prove: B is not the midpoint of  $\overline{AC}$
- 9) Given:  $\triangle ABF, \triangle FAE, \overline{BF}$  intersects  $\overline{AE}$  at G,  $\triangle FGA \cong \triangle BGE$ ,  $\overline{BA}$  is not congruent to  $\overline{FE}$   
 Prove:  $\angle ABG$  is not congruent to  $\angle EFG$
- 10) Given:  $\triangle ABC, \angle BAC \cong \angle FBA$ , point D is between A and C,  $\overline{BD}$  is not a median of  $\triangle ABC$   
 Prove:  $\overline{BD}$  is not an altitude of  $\triangle ABC$
- 11) Given:  $\triangle AGD$  with medians  $\overline{AE}, \overline{DB}$ , and  $\overline{GF}$  which all intersect at point C,  $\angle GCE \cong \angle ECD$ ,  $\overline{FC}$  is not congruent to  $\overline{BC}$   
 Prove:  $\angle BAC$  is not congruent to  $\angle FAC$
- 12) Given:  $\overline{AC}$  is a radius and  $\overline{AD}$  is a chord of circle C, point C is the midpoint of  $\overline{DB}$ , point C is between A and E,  $\overline{AB}$  is not congruent to  $\overline{ED}$   
 Prove:  $\angle ABC$  is not congruent to  $\angle EDC$
- 13) Given: Point C is between B and D, point C is between A and E,  $\overline{EC} \cong \overline{AC}$ ,  $\overline{AB}$  is not congruent to  $\overline{DE}$   
 Prove:  $\angle B$  is not congruent to  $\angle D$
- 14) Given:  $\overline{AD} \text{ P } \overline{BC}, \overline{AC}$  and  $\overline{BD}$  intersect at point E,  $\overline{DC}$  is not congruent to  $\overline{BA}$   
 Prove:  $\overline{BC}$  is not congruent to  $\overline{DA}$
- 15) Given: Points F, A, C, and E are all on the same line, C is between D and G, A is between F and E, B is between F and G, A is between B and H, C is between A and E,  $\overline{AB} \text{ P } \overline{CD}$ ,  $\overline{CE} \cong \overline{AF}, \overline{AB} \cong \overline{CD}$ ,  $\overline{ED}$  is not perpendicular to  $\overline{CD}$   
 Prove:  $\overline{FB}$  is not perpendicular to  $\overline{AB}$

- 16) Given: Point F is between A and B, point E is between B and C,  $\overline{FC}$  and  $\overline{AE}$  intersect at point D,  $\angle A \cong \angle C$ ,  $\angle FDB \cong \angle EDB$ ,  $\overline{FB}$  is not congruent to  $\overline{EB}$   
 Prove:  $\overline{AD}$  is not congruent to  $\overline{CD}$
- 17) Given:  $\triangle ABF$ ,  $\triangle DBC$ ,  $\triangle EDF$ , point D is the midpoint of B and F, point D is between C and E, E is between A and F,  $\overline{AE} \cong \overline{CB}$ ,  $\overline{AE}$  is not congruent to  $\overline{EF}$   
 Prove:  $\overline{CD}$  is not congruent to  $\overline{ED}$
- 18) Given:  $\triangle ABC$ ,  $\triangle EFD$ ,  $\overline{EF} \parallel \overline{AC}$ , point F is between C and B, point E is between A and B, point D is between A and C,  $\angle EDF \cong \angle DFC$ ,  $\overline{FC}$  is not congruent to  $\overline{BF}$   
 Prove:  $\angle A$  is not congruent to  $\angle EFD$
- 19) Given: Points F, A, D, and E are all on the same line, point F is between D and E, point E is between A and F,  $\overline{AB}$  is not parallel to  $\overline{CD}$ ,  $\overline{CD} \cong \overline{BA}$ ,  $\overline{DE} \cong \overline{AF}$ ,  $\overline{CE}$  and  $\overline{BF}$  do not intersect  
 Prove:  $\overline{CE}$  is not congruent to  $\overline{BF}$
- 20) Given: Quadrilateral ABDC with diagonal  $\overline{AD}$ , point B is between D and F, point C is between E and D,  $\overline{BD} \parallel \overline{AC}$ ,  $\overline{BD}$  is not perpendicular to  $\overline{AB}$ ,  $\angle ECA$  is a right angle  
 Prove:  $\overline{AB}$  is not parallel to  $\overline{CD}$