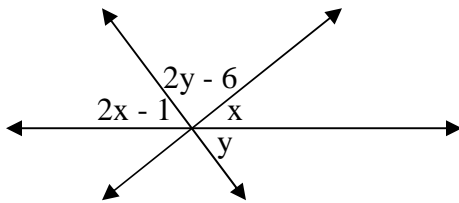


Do the following problems as indicated. Show all your work.

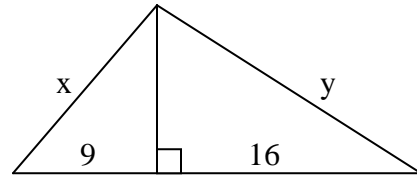
1. If a regular polygon has 30 sides, with side 18.376 inches and radius 87.899 inches find the following:
  - a. the sum of the measures of the angles of the polygon;
  - b. the measure of each exterior angle;
  - c. the measure of each interior angle;
  - d. the number of diagonals that can be drawn in the polygon;
  - e. the area of the polygon;
  - f. the volume of a right prism with the polygon as base and altitude 20 inches.

2. Solve for  $x$  and  $y$ :

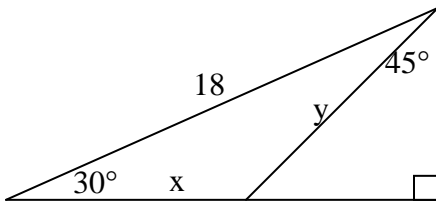
a.



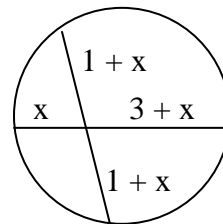
c.



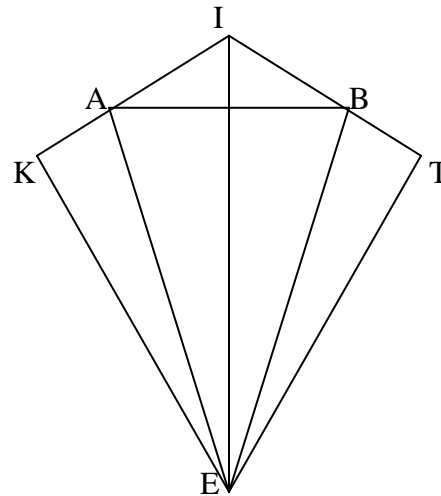
b.



d.



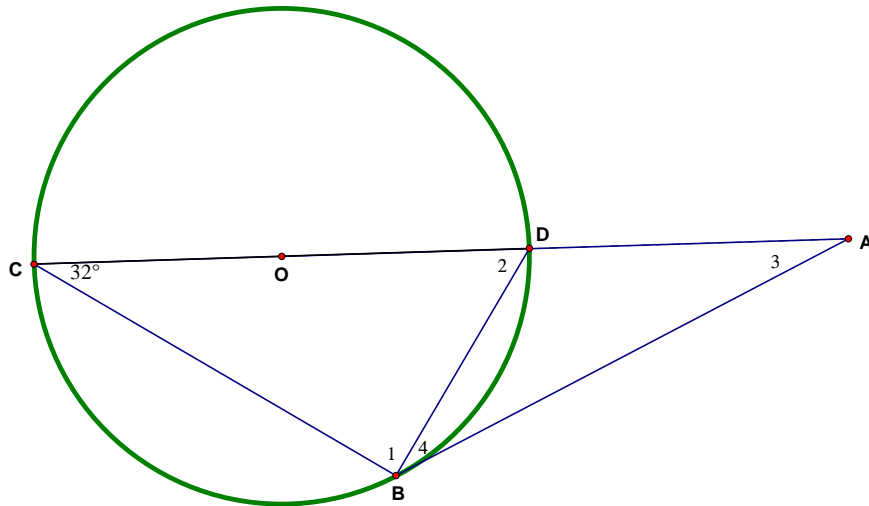
3. Given: KITE is a kite and  $\overline{KA} \cong \overline{TB}$   
 Prove:  $\triangle AEK \cong \triangle BET$



4. Given:  $\odot O$  with tangent  $\overline{AB}$ , secant  $\overline{AC}$ , and chords  $\overline{BD}$ ,  $\overline{BC}$

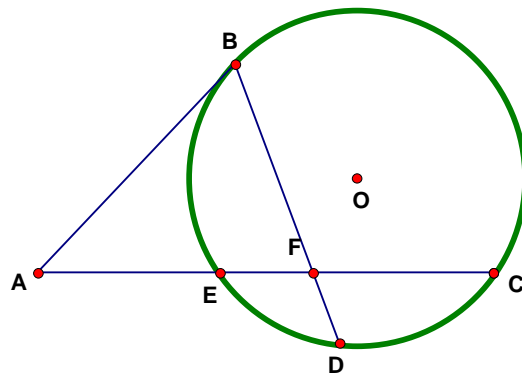
Find: (12 pts.)

- a.  $m\angle 1$                       b.  $m\angle 2$                       c.  $m\angle 3$                       d.  $m\angle 4$



5. Given:  $\odot O$  with tangent  $\overline{AB}$ , secant  $\overline{AC}$ , and chords  $\overline{BD}$ ,  $\overline{EC}$  with  $AE = 20$ ,  $EF = 10$ ,  $FC = 20$ ,  $BD = 33$ , find: (9 points)

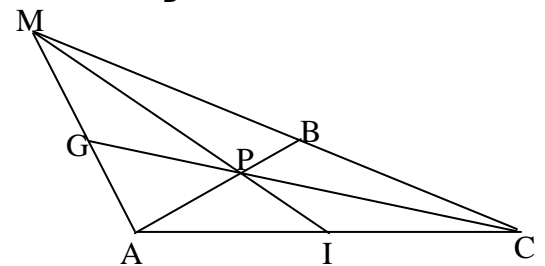
- a.  $AB$                       b.  $BF$                       c.  $FD$



6. Given:  $\triangle MAC$  with medians  $\overline{AB}$ ,  $\overline{MI}$ ,  $\overline{CG}$

$$AB = PC = 27, PI = 12$$

Find:  $PB, GP, MI$  (9 pts)



**Answer Key:**

1. a.  $5040^\circ$   
b.  $12^\circ$   
c.  $168^\circ$   
d. 405  
e.  $A = 24,095.753$  sq in  
f.  $V = 481,915.054$  cu in

2. a.  $x = 27, y = 53$   
b.  $x = 15, y = 20$   
c.  $x = 9\sqrt{3} - 9, y = 9\sqrt{2}$   
d.  $x = 1$

3. Proof:

STATEMENTS	REASONS
1. KITE is a kite, $\overline{KA} \cong \overline{TB}$	1. Given
2. $\overline{KE} \cong \overline{TE}$	2. Definition of a kite
3. $\angle K \cong \angle T$	3. A kite has one pair of $\cong$ opposite angles.
4. $\triangle AEK \cong \triangle BET$	4. SAS

4. a.  $m\angle 1 = 90^\circ$   
b.  $m\angle 2 = 58^\circ$   
c.  $m\angle 3 = 26^\circ$   
d.  $m\angle 4 = 32^\circ$
5. a.  $AB = 10\sqrt{10}$   
b.  $BF = 25$  or 8  
c.  $FD = 8$  or 25
6.  $PB = 9, GP = 13.5, MI = 36$