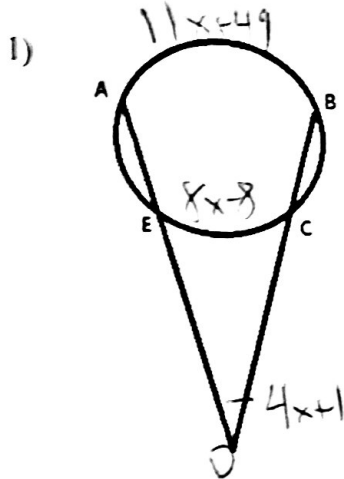


Name: _____
 Date: _____
 Class: _____

Geometry
 Unit 10
 HW 10-4



If $m\widehat{AB} = 11x + 49$, $m\widehat{EC} = 8x - 8$, and $m\angle ADB = 4x + 1$, find $m\angle ADB$

$$m\angle ABD = \frac{1}{2}(m\widehat{AB} - m\widehat{EC})$$

$$4x + 1 = \frac{1}{2}(11x + 49 - (8x - 8))$$

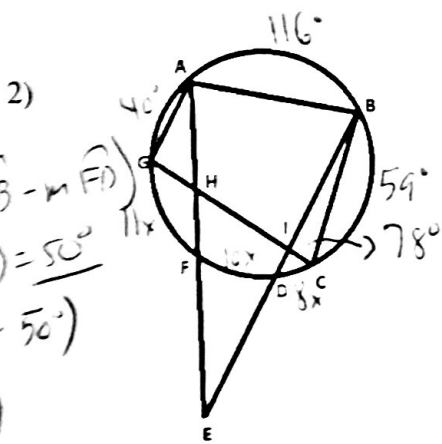
$$2(4x + 1) = \frac{1}{2}(11x + 49 - 8x + 8)$$

$$8x + 2 = 3x + 57$$

$$5x = 55$$

$$x = 11$$

$$4(11) + 1 = 45$$



$m\angle BCG = 78^\circ$, $m\angle AG = 40^\circ$, $m\widehat{BC} = 59^\circ$,
 and $GF : FD : DC = 11 : 10 : 8$. Find $m\angle E$

$$m\angle E = \frac{1}{2}(m\widehat{AB} - m\widehat{FD})$$

$$m\widehat{FD} = 10(5) = 50$$

$$m\angle E = \frac{1}{2}(116 - 50)$$

$$= \frac{1}{2}(66)$$

$$= 33$$

$$m\angle BCG = \frac{1}{2}m\widehat{GB}$$

$$m\widehat{GB} = 2 \cdot 78$$

$$= 156$$

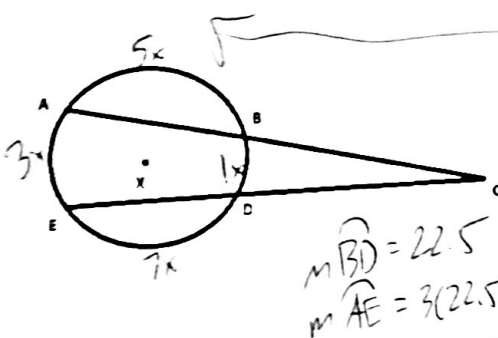
$$156 - 40 = 116 = m\widehat{AB}$$

$$40 + 116 + 59 = 215$$

$$11x + 10x + 8x = 145$$

$$29x = 145$$

$$x = 5$$



If $\widehat{BD} : \widehat{AE} : \widehat{AB} : \widehat{ED} = 1 : 3 : 5 : 7$, find $m\angle C = \frac{1}{2}(m\widehat{AE} - m\widehat{BD})$

$$1x + 3x + 5x + 7x = 360$$

$$16x = 360$$

$$x = 22.5$$

$$m\widehat{BD} = 22.5$$

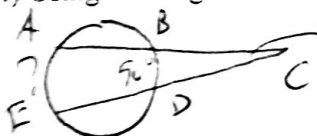
$$m\widehat{AE} = 3(22.5) = 67.5$$

$$m\angle C = \frac{1}{2}(67.5 - 22.5)$$

$$= \frac{1}{2}(45)$$

$$= 22.5$$

4) Using the diagram for #4 - if $m\angle C = 45^\circ$ and $m\widehat{BD} = 50^\circ$, find $m\widehat{AE}$.



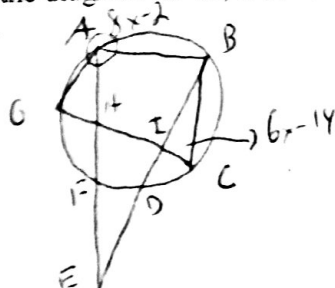
$$m\angle C = \frac{1}{2}(m\widehat{AE} - m\widehat{BD})$$

$$2(45) = \frac{1}{2}(x - 50)$$

$$90 = x - 50$$

$$x = 140$$

5) Using the diagram for #2, if $m\angle GAB = 8x - 2$, and $m\angle GCB = 6x - 14$. Find $m\angle GAB$.



Opp \angle 's of inscribed Quad are supp

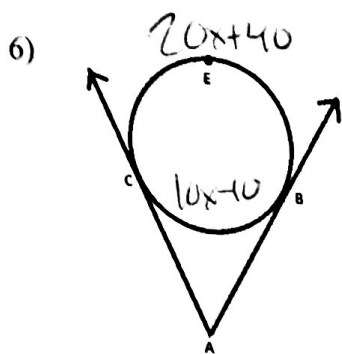
$$8x - 2 + 6x - 14 = 180$$

$$14x - 16 = 180$$

$$14x = 196$$

$$x = 14$$

$$8(14) - 2 = 110$$



\overline{AC} and \overline{AB} are both tangents
 $m\widehat{CEB} = 20x + 40$ and $m\widehat{CB} = 10x - 10$
 find $m\angle A$.

$$20x + 40 + 10x - 10 = 360$$

$$30x + 30 = 360$$

$$30x = 330$$

$$x = 11$$

$$m\angle A = \frac{1}{2}(m\widehat{CEB} - m\widehat{CB})$$

$$2(11) + 40 = 260$$

$$10(11) - 10 = 100$$

$$\frac{1}{2}(260 - 100)$$

$$= \frac{1}{2}(160)$$

$$= 80$$

7) Using the diagram for #6 - $m\angle A = 50^\circ$, find $m\widehat{CB} + m\widehat{CEB} = 360$

$$m\angle A = \frac{1}{2}(m\widehat{CEB} - m\widehat{CB})$$

$$100 = 360 - 2x$$

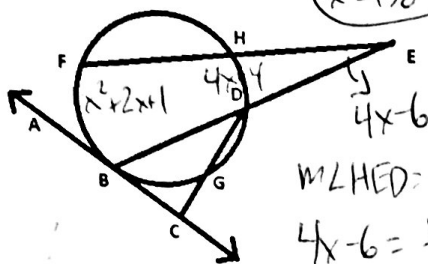
$$-260 = -2x$$

$$x = 130$$

$$130^\circ$$

$$360 - x$$

8)



\overline{CB} is a tangent,

$m\widehat{FB} = x^2 + 2x + 1$, $m\widehat{GD} = 4x + 4$, and
 $m\angle HED = 4x - 6$, find $m\angle HED$.

$$m\angle HED = \frac{1}{2}(m\widehat{FB} - m\widehat{GD})$$

$$4x - 6 = \frac{1}{2}(x^2 + 2x + 1 - (4x + 4))$$

$$2(4x - 6) = \frac{1}{2}(x^2 + 2x + 1 - 4x - 4)$$

$$8x - 12 = x^2 - 2x - 3$$

$$0 = x^2 - 10x + 9$$

$$0 = (x - 1)(x - 9)$$

$$x = 1 \text{ or } x = 9$$

Argue

$$4(9) - 6$$

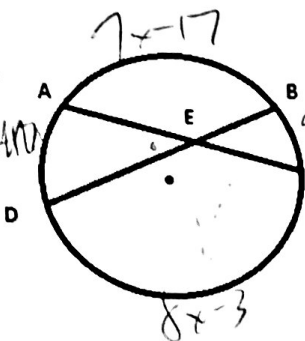
$$36$$

9)

$$6x - 16$$

$$4(16) - 16$$

$$86^\circ$$



In this circle, $m\widehat{BC} = 5x - 20$, $m\widehat{BA} = 7x - 17$

$m\widehat{AD} = 6x - 16$, and $m\widehat{DC} = 8x - 3$.

Find $m\angle DEA$.

all 4 arcs = 360

$$26x - 56 = 360$$

$$26x = 416$$

$$x = 16$$

$$m\angle DEA = \frac{1}{2}(m\widehat{AD} + m\widehat{BC})$$

$$= \frac{1}{2}(86 + 60)$$

$$= \frac{1}{2}(146)$$

$$= 73^\circ$$

10) Using the diagram for #9, $m\angle BEC = 2x^2 - 4x - 20$, $m\widehat{BC} = x^2 - 4x - 20$, and $m\angle DEA = 5x + 15$. Find $m\widehat{AD}$.

$$4x + 15$$

$$m\angle DEA = \frac{1}{2}(m\widehat{AD} + m\widehat{BC})$$

$$2(2x^2 - 4x - 20) = \frac{1}{2}(x^2 - 4x - 20 + 4x + 15)$$

$$4x^2 - 8x - 40 = x^2 - 5$$

$$3x^2 - 8x - 35 = 0$$

$$x^2 - 8x - 105 = 0$$

$$(x - 5)(x + 7) = 0$$

$$(x - 5)(3x + 7) = 0$$

$$x = 5 \text{ or } x = -\frac{7}{3}$$

Arg arcs

$$5(5) + 15 = 40^\circ$$

