## **Tangent Lines and Tangent Circles** Total points = 41

1. 
$$\frac{x}{2} = 180^{\circ} - (29^{\circ} + 90^{\circ}) \checkmark$$
 $\frac{x}{2} = 180^{\circ} - 119^{\circ} \checkmark$ 
 $\frac{x}{2} = 61^{\circ} \checkmark$ 
 $x = 2(61^{\circ}) \checkmark$ 
 $x = 28^{\circ} \checkmark$ 
 $x = 28^{\circ} \checkmark$ 

$$\begin{array}{c|c}
x = 122^{\circ} & \checkmark \\
2. & x = 180^{\circ} - (42^{\circ} + 90^{\circ}) & \checkmark \\
x = 180^{\circ} - 132^{\circ} & \checkmark
\end{array}$$
7.  $x = 8 + 12$ 

$$x = 48^{\circ}$$
 8.  $c^{2} = 48^{\circ}$  8.  $c^{2} = 48^{\circ}$  8.  $c^{2} = 48^{\circ}$  9.  $c^{2} =$ 

4. 
$$x = 180^{\circ} - (45^{\circ} + 90^{\circ}) \checkmark$$
  
 $x = 180^{\circ} - 135^{\circ} \checkmark$   
 $x = 45^{\circ} \checkmark$   
 $y = 180^{\circ} - (45^{\circ} + 90^{\circ}) \checkmark$ 

$$y = 180^{\circ} - (45^{\circ} + 90^{\circ}) \checkmark$$

$$y = 180^{\circ} - 135^{\circ} \checkmark$$

$$y = 45^{\circ} \checkmark$$

$$x = 55^{\circ} \checkmark$$

$$y = 180^{\circ} - (35^{\circ} + 90^{\circ}) \checkmark$$

$$y = 180^{\circ} - 125^{\circ} \checkmark$$

$$z = 90^{\circ} - 35^{\circ}$$

$$z = 55^{\circ}$$
6.  $x = 2(14)$ 

7. 
$$x = 8 + 12 \checkmark$$

x = 6

8. 
$$c^2 = a^2 + b^2$$
   
 $(x+4)^2 = x^2 + 8^2$    
 $x^2 + 8x + 16 = x^2 + 64$    
 $8x = 64 - 16$    
 $\frac{8x}{8} = \frac{48}{8}$ 

9. 
$$c^2 = a^2 + b^2$$
  $(x+5)^2 = 5^2 + 12^2$   $(x+5)^2 = 25 + 144$   $\sqrt{(x+5)^2} = \sqrt{169}$   $\sqrt{x+5} = 13$   $\sqrt{x+5} = 13$   $\sqrt{x+5} = 13$ 

## **Tangent Lines and Tangent Circles** Total points = 41

1. 
$$\frac{x}{2} = 180^{\circ} - (29^{\circ} + 90^{\circ}) \checkmark$$
  $y = 55^{\circ}$   
 $\frac{x}{2} = 180^{\circ} - 119^{\circ} \checkmark$   $z = 90^{\circ} - 20^{\circ}$   
 $\frac{x}{2} = 61^{\circ} \checkmark$   $x = 2(61^{\circ}) \checkmark$   $x = 28^{\circ}$ 

2. 
$$x = 180^{\circ} - (42^{\circ} + 90^{\circ})$$
   
 $x = 180^{\circ} - 132^{\circ}$    
 $x = 48^{\circ}$ 

 $x = 122^{\circ}$ 

3. 
$$x = 180^{\circ} - (60^{\circ} + 90^{\circ}) \checkmark$$
  
 $x = 180^{\circ} - 150^{\circ} \checkmark$   
 $x = 30^{\circ} \checkmark$   
4.  $x = 180^{\circ} - (45^{\circ} + 90^{\circ}) \checkmark$ 

$$x = 180^{\circ} - 135^{\circ} \checkmark$$

$$x = 45^{\circ} \checkmark$$

$$y = 180^{\circ} - (45^{\circ} + 90^{\circ}) \checkmark$$

$$y = 180^{\circ} - 135^{\circ} \checkmark$$

$$y = 160^{\circ} - 135^{\circ}$$

$$y = 45^{\circ}$$

$$x = 90^{\circ} - 35^{\circ}$$

$$x = 55^{\circ}$$

$$y = 180^{\circ} - (35^{\circ} + 90^{\circ})$$

$$y = 180^{\circ} - 125^{\circ}$$

$$y = 55^{\circ} \checkmark$$

$$z = 90^{\circ} - 35^{\circ} \checkmark$$

$$z = 55^{\circ} \checkmark$$

6. 
$$x = 2(14)$$
  $\checkmark$   $x = 28^{\circ}$ 

7. 
$$x = 8 + 12 \checkmark$$
  
 $x = 20 \checkmark$ 

8. 
$$c^2 = a^2 + b^2 \checkmark$$
  
 $(x+4)^2 = x^2 + 8^2 \checkmark$   
 $x^2 + 8x + 16 = x^2 + 64 \checkmark$   
 $8x = 64 - 16 \checkmark$   
 $\frac{8x}{8} = \frac{48}{8} \checkmark$   
 $x = 6 \checkmark$ 

9. 
$$c^2 = a^2 + b^2 \checkmark$$
  
 $(x+5)^2 = 5^2 + 12^2 \checkmark$   
 $(x+5)^2 = 25 + 144 \checkmark$   
 $\sqrt{(x+5)^2} = \sqrt{169} \checkmark$   
 $x+5=13 \checkmark$   
 $x=13-5 \checkmark$   
 $x=8 \checkmark$ 

## **Tangent Lines and Tangent Circles** Total points = 41

$$\frac{x}{2} = 180^{\circ} - (29^{\circ} + 90^{\circ}) \checkmark \qquad y = 55^{\circ} \checkmark$$

$$\frac{x}{2} = 180^{\circ} - 119^{\circ} \checkmark \qquad z = 90^{\circ} - 35^{\circ} \checkmark$$

$$\frac{x}{2} = 61^{\circ} \checkmark \qquad 6. \quad x = 2(14) \checkmark$$

$$x = 2(61^{\circ}) \checkmark \qquad x = 122^{\circ} \checkmark$$

$$x = 122^{\circ} \checkmark \qquad 7. \quad x = 8 + 12 \checkmark$$

$$x = 180^{\circ} - 132^{\circ}$$
  
 $x = 48^{\circ}$   
3.  $x = 180^{\circ} - (60^{\circ} + 90^{\circ})$   
 $x = 180^{\circ} - 150^{\circ}$   
 $x = 30^{\circ}$ 

2.  $x = 180^{\circ} - (42^{\circ} + 90^{\circ})$ 

4. 
$$x = 180^{\circ} - (45^{\circ} + 90^{\circ})$$
   
 $x = 180^{\circ} - 135^{\circ}$    
 $x = 45^{\circ}$    
 $y = 180^{\circ} - (45^{\circ} + 90^{\circ})$    
 $y = 180^{\circ} - 135^{\circ}$    
 $y = 45^{\circ}$    
5.  $x = 90^{\circ} - 35^{\circ}$ 

5. 
$$x = 90^{\circ} - 35^{\circ} \checkmark$$
  
 $x = 55^{\circ} \checkmark$   
 $y = 180^{\circ} - (35^{\circ} + 90^{\circ}) \checkmark$   
 $y = 180^{\circ} - 125^{\circ} \checkmark$ 

$$\begin{bmatrix} x = 20 \end{bmatrix} \checkmark$$
8.  $c^2 = a^2 + b^2 \checkmark$ 
 $(x+4)^2 = x^2 + 8^2 \checkmark$ 
 $x^2 + 8x + 16 = x^2 + 64 \checkmark$ 
 $8x = 64 - 16 \checkmark$ 
 $\frac{8x}{8} = \frac{48}{8} \checkmark$ 
 $\boxed{x=6} \checkmark$ 
9.  $c^2 = a^2 + b^2 \checkmark$ 

9. 
$$c^{2} = a^{2} + b^{2}$$
  $(x+5)^{2} = 5^{2} + 12^{2}$   $(x+5)^{2} = 25 + 144$   $\sqrt{(x+5)^{2}} = \sqrt{169}$   $\sqrt{x+5} = 13$   $\sqrt{x+5} =$ 

## Tangent Lines and Tangent Circles

1. 
$$\frac{x}{2} = 180^{\circ} - (29^{\circ} + 90^{\circ})$$
  $\sqrt{\frac{y = 55^{\circ}}{2}}$   $\sqrt{\frac{z = 90^{\circ} - 35^{\circ}}{z = 55^{\circ}}}$   $\sqrt{\frac{z = 55^{\circ}}{2}}$   $\sqrt{\frac{z = 55^{\circ}}{2}}$   $\sqrt{\frac{z = 2(61^{\circ})}{2}}$   $\sqrt{\frac{z = 2(61^{\circ})}{2}}$   $\sqrt{\frac{z = 2(14)}{2}}$   $\sqrt{\frac{z = 28^{\circ}}{2}}$ 

2. 
$$x = 180^{\circ} - (42^{\circ} + 90^{\circ}) \checkmark$$
  
 $x = 180^{\circ} - 132^{\circ} \checkmark$   
 $x = 48^{\circ} \checkmark$   
3.  $x = 180^{\circ} - (60^{\circ} + 90^{\circ}) \checkmark$   
 $x = 180^{\circ} - 150^{\circ} \checkmark$   
 $x = 30^{\circ} \checkmark$   
4.  $x = 180^{\circ} - (45^{\circ} + 90^{\circ}) \checkmark$ 

$$x = 180^{\circ} - 135^{\circ} \checkmark$$

$$x = 45^{\circ} \checkmark$$

$$y = 180^{\circ} - (45^{\circ} + 90^{\circ}) \checkmark$$

$$y = 180^{\circ} - 135^{\circ} \checkmark$$

$$y = 45^{\circ} \checkmark$$

$$5. \quad x = 90^{\circ} - 35^{\circ} \checkmark$$

5. 
$$x = 90^{\circ} - 35^{\circ} \checkmark$$
  
 $x = 55^{\circ} \checkmark$   
 $y = 180^{\circ} - (35^{\circ} + 90^{\circ}) \checkmark$   
 $y = 180^{\circ} - 125^{\circ} \checkmark$ 

6. 
$$x = 2(14)$$
 $x = 28^{\circ}$ 
7.  $x = 8 + 12$ 
 $x = 20$ 
8.  $c^{2} = a^{2} + b^{2}$ 
 $(x + 4)^{2} = x^{2} + 8^{2}$ 
 $x^{2} + 8x + 16 = x^{2} + 64$ 
 $8x = 64 - 16$ 
 $8x = \frac{48}{8}$ 
 $x = 6$ 
9.  $c^{2} = a^{2} + b^{2}$ 
 $(x + 5)^{2} = 5^{2} + 12^{2}$ 
 $(x + 5)^{2} = 25 + 144$ 
 $\sqrt{(x + 5)^{2}} = \sqrt{169}$ 

 $\dot{x} + 5 = 13$   $\checkmark$ 

x = 13 - 5  $\checkmark$ 

x = 8