Circle theorems and equations Worksheet

Geometry and Trigonometry

Name _____ Date _____

Warm-up

1. An inscribed angle is $61°$. What's the arc, in degrees?

2. Which is a circle with center $(0, 0)$ and radius 8?
   (A) $x^2 - y^2 = 64$ (B) $x + y = 8$ (C) $x^2 + y^2 = 64$ (D) $x^2 + y^2 = 8$

3. An inscribed angle stands on a diameter. What is it?
   (A) $60°$ (B) $180°$ (C) $90°$ (D) $45°$

4. Find the radius of $(x - 6)^2 + (y - 6)^2 = 100$.

5. A central angle is $98°$. Find the inscribed angle on the same arc, in degrees.

Practice

6. A radius of 3 meets a tangent of length 4. How far is the tangent's end from the center?

7. A circle has center $(1, 5)$ and passes through $(3, 5)$. Find r^2.

8. An arc is $60°$ of a circle with radius 6. Its length is $k\pi$. Find k.

9. Is the point $(12, 16)$ on $x^2 + y^2 = 400$? Find its distance from the center.

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10. Two inscribed angles stand on the same arc. One is $42°$. What's the other, in degrees?

11. Find r: $x^2 + y^2 - 4x = 140$.

Challenge

12. From one outside point, two tangents go to a circle. One has length 5. How long is the other?

13. $x^2 + y^2 = 225$ meets the line $y = 12$ at two points. Find the positive x.

14. Triangle ABC is inscribed with AB a diameter. Angle A is $21°$. Find angle B, in degrees.

15. A circle has diameter endpoints $(0, 0)$ and $(4, 0)$. What's the x-coordinate of its center?

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Circle theorems and equations Worksheet: Answer Key

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1. 122

   The arc is double.

2. (C) $x^2 + y^2 = 64$

   The right side is r^2.

3. (C) $90°$

   The arc is $180°$, and the angle is half.

4. 10

   $\sqrt{100}$.

5. 49

   Half of 98.

6. 5

   Right triangle at the tangent point.

7. 4

   Distance is 2, so square it.

8. 2

   $\frac{60}{360} \cdot 2\pi(6)$.

9. 20

   $\sqrt{12^2 + 16^2}$.

10. 42

    Both are half of the same arc.

11. 12

    Complete the square with 4.

12. 5

    Tangents from one point are equal.

13. 9

    $x^2 = 225 - 12^2$.

14. 69

    Angle C is $90°$.

15. 2

    The center is the midpoint.

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