

13.6

Monday, May 8, 2017 7:50 AM

A series of horizontal blue lines for writing, with a vertical red margin line on the left side.

Geo H

13.6 Using equations of circles

Find the following information given the equation for the circle:

1. $x^2 + y^2 = 17$; find radius

$$r = \sqrt{17}$$

2. $(x-5)^2 + (y+3)^2 = 10$; find diameter

$$d = 2\sqrt{10}$$

3. $2(x-5)^2 + 2(y+3)^2 = 50$; find circumference

$$r = 5$$

$$C = 10\pi$$

4. $3(x+6)^2 + 3(y-4)^2 = 90$; find area

$$r = \sqrt{30}$$

$$A = 30\pi$$

Write the equation of the circle with the given information:

5. Center (5, -2) and radius $3\sqrt{2}$

$$(x-5)^2 + (y+2)^2 = (3\sqrt{2})^2 \\ = 18$$

6. Diameter with endpoints (4, -1) and (10, -1)

$$\text{midpt} = \left(\frac{4+10}{2}, \frac{-1+(-1)}{2} \right) \\ = (7, -1) \\ (x-7)^2 + (y+1)^2 = 9$$

7. Diameter with endpoints (7, 2) and (-3, 5)

$$\text{midpt} = \left(\frac{7+(-3)}{2}, \frac{2+5}{2} \right) \\ = \left(2, \frac{7}{2} \right)$$

$$d = \sqrt{(7-(-3))^2 + (2-5)^2} \\ = \sqrt{100 + 9} \\ = \sqrt{109} \rightarrow r = \frac{\sqrt{109}}{2}$$

8. Diameter with endpoints (-4, 5) and (-2, -1)

$$\text{midpt} = \left(\frac{-4+(-2)}{2}, \frac{5+(-1)}{2} \right) \\ = (-3, 2)$$

$$d = \sqrt{(-4-(-2))^2 + (5-(-1))^2} \\ = \sqrt{4 + 36} \\ = 2\sqrt{10}$$

$$(x-2)^2 + (y-\frac{7}{2})^2 = \frac{109}{4}$$

$$(x+3)^2 + (y-2)^2 = 10$$