Bellwork Alg 2B Friday, November 17, 2017

1. Find the coordinates of the center and the EXACT length of the radius of the given circle.

$(x+7)^2+(y-13)^2=\sqrt{37}$ Center: Radius =

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2. Write the equation of each circle.

a) The center is $(2,5)$ and the diameter is $\sqrt{17}$

b) The center is $(8,-3)$ and $(14,2)$ is on the circle.

c) The endpoints of a diameter are $(5,-1)$ & $(-2,2)$.

3. How many times do these two circles intersect?

$(x+4)^2+(x-1)^2=144$ and $(x-11)^2+(y+7)^2=64$

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Answers

1. Find the coordinates of the center and the EXACT length of the radius of the given circle.

$(x+7)^2 + (y-13)^2 = \sqrt{37}$

-7 left 13 up

Center: $(-7, 13)$

Radius = $\sqrt[4]{37}$

$r^2 = \sqrt{37}$

$r = \sqrt{\sqrt{37}} = (37^{1/2})^{1/2} = 37^{1/4} = \sqrt[4]{37}$

2. Write the equation of each circle.

a) The center is $(2,5)$ and the diameter is $\sqrt{17}$

$d = \sqrt{17}$

$r = \frac{\sqrt{17}}{2}$

$r^2 = \left(\frac{\sqrt{17}}{2}\right)^2 = \frac{17}{4}$

$(x-2)^2 + (y-5)^2 = \frac{17}{4}$

b) The center is $(8,-3)$ and $(14,2)$ is on the circle.

$r = \sqrt{(14-8)^2 + (2-(-3))^2}$

$= \sqrt{6^2 + 5^2} = \sqrt{36+25}$

$r = \sqrt{61}$

$(x-8)^2 + (y+3)^2 = 61$

c) The endpoints of a diameter are $(5,-1)$ & $(-2,2)$.

center is midpoint of $(5,-1)$ & $(-2,2)$ $\rightarrow$ $\left(\frac{5+-2}{2}, \frac{-1+2}{2}\right)$

$= \left(\frac{3}{2}, \frac{1}{2}\right)$

For radius use distance formula from center to either endpoint

$r = \sqrt{\left(\frac{3}{2} - -2\right)^2 + \left(\frac{1}{2} - 2\right)^2} =$

$= \sqrt{\left(\frac{7}{2}\right)^2 + (-3/2)^2}$

$= \sqrt{\frac{49}{4} + \frac{9}{4}} = \sqrt{\frac{58}{4}} = \sqrt{\frac{29}{2}}$

$(x-3/2)^2 + (y-1/2)^2 = \frac{29}{2}$

3. How many times do these two circles intersect?

$(x+4)^2 + (y-1)^2 = 144$ and $(x-11)^2 + (y+7)^2 = 64$

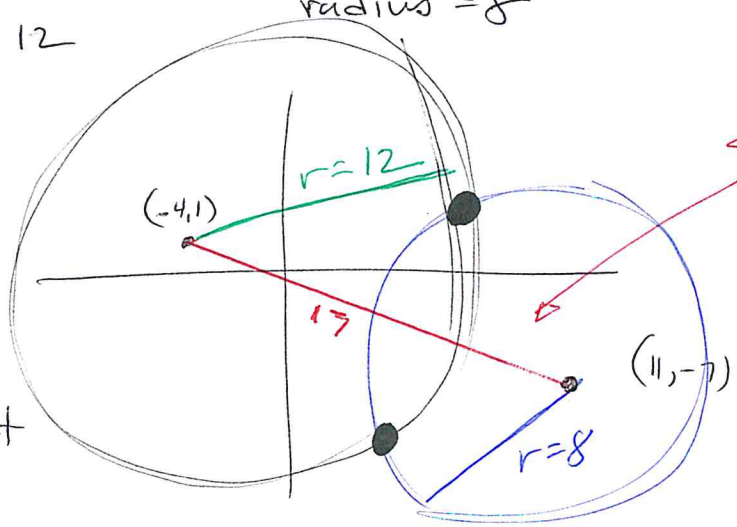
center $(-4,1)$

radius $= 12$

center $(11,-7)$

radius $= 8$

2 points of intersection




DISTANCE BETWEEN CENTERS:

$= \sqrt{(11--4)^2 + (-7-1)^2}$

$= \sqrt{15^2 + 8^2}$

$= \sqrt{225 + 64}$

$= \sqrt{289}$

$= 17$

Since the two radii have a sum greater than the distance between the centers, the circles intersect twice