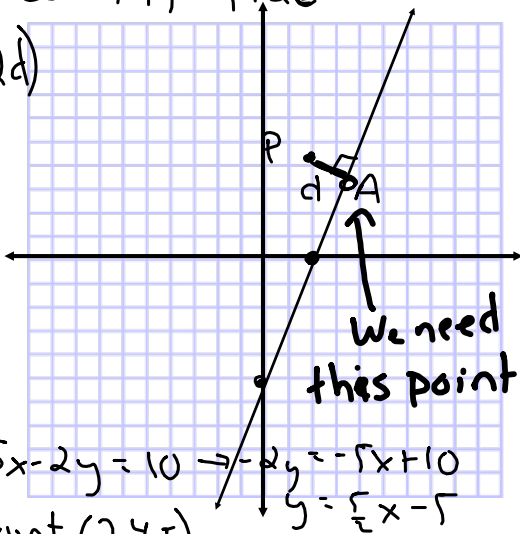


p. 86 # 14, 9, 12d

12d)



$$5x - 2y = 10 \Rightarrow -2y = -5x + 10$$

$$y = \frac{5}{2}x - 5$$

Point (2, 4.5)

Equation for AP

$$m_1 = -\frac{2}{5} \quad P(2, 4.5)$$

$$4.5 = -\frac{2}{5}(2) + b$$

$$\frac{9}{2} = -\frac{4}{5} + b$$

$$\frac{45}{10} + \frac{8}{10} = b$$

$$\frac{53}{10} = b$$

$$5.3 = b$$

$$y = -\frac{2}{5}x + \frac{53}{10}$$

9.

$$d_{FM}^2 = 80^2 + 16^2$$

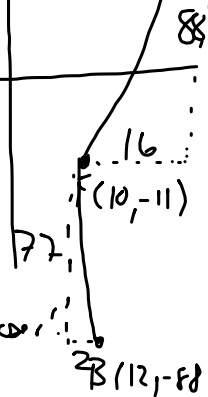
$$d_{FM} = \sqrt{8000}$$

$$d_{BF}^2 = 77^2 + 2^2$$

$$d_{BF} = \sqrt{5973}$$

clear!

(24, 77) M



Substitution

$$-\frac{2}{5}x + \frac{53}{10} = \frac{5}{2}x - 5$$

$$-4x + 53 = 25x - 50$$

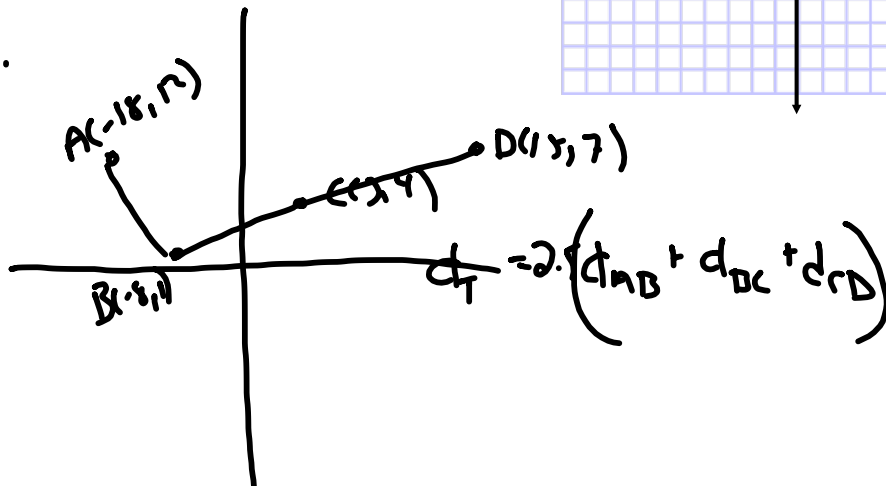
$$\frac{103}{29} = \frac{29x}{29}$$

$$y = \frac{5}{2} \left(\frac{103}{29} \right) - 5$$

$$y = \frac{515}{58} - 5$$

$$= \frac{225}{58}$$

14.

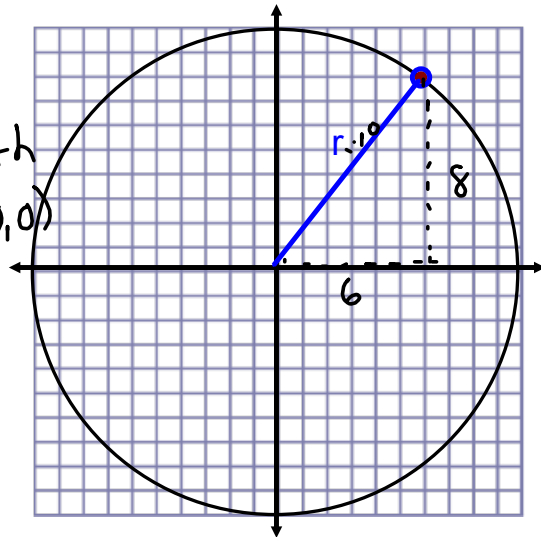


Thursday, March 5, 2020

Bell Work

The radius of the circle shown below is 10. Can you apply your understanding of length to determine the equation for a circle centred at the origin? Clearly show your math, and explain your thinking! Once you are done, discuss with a classmate to see if you are on the same page!

$$\begin{aligned} r^2 &= x^2 + y^2 \quad \leftarrow \text{equation of a circle with center } (0,0) \\ r^2 &= 6^2 + 8^2 \\ r^2 &= 36 + 64 \\ r^2 &= 100 \\ r &= 10 \end{aligned}$$



2.3 The Equation of a Circle

Vocabulary

circle - the set of all points in a plane that are the same distance from a fixed point (the center)

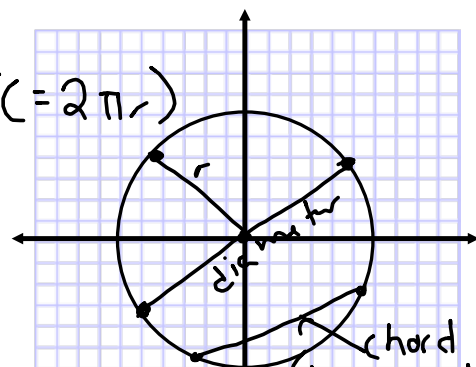
radius - the distance from the centre to any point on the circle

diameter - twice the radius

circumference - the perimeter of a circle ($C = 2\pi r$)

Equation of a Circle (centered at the origin):

$$x^2 + y^2 = r^2$$



What is this the same as? Pythagorean theorem, distance

chord (line segment that doesn't go through the center.)

Practice Problems

$$x^2 + y^2 = r^2$$

1. Find the equation of a circle centred at the origin with radius 4.

$$r = 4$$

$$x^2 + y^2 = (4)^2$$

$$x^2 + y^2 = 16$$

2. Find the equation of a circle centred at the origin that passes through (3, 5). Also state the radius and the x and y intercepts of the circle.

$$x = 3$$

$$y = 5$$

$$x^2 + y^2 = 34$$

$$(3)^2 + (5)^2 = r^2$$

$$9 + 25 = r^2$$

$$34 = r^2$$

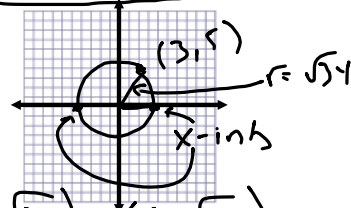
$$r = \sqrt{34}$$

x-ints

$$(\sqrt{34}, 0)$$

$$(-\sqrt{34}, 0)$$

y-ints: $(0, \sqrt{34}), (0, -\sqrt{34})$



3. A raindrop falls into a puddle and causes a circular ripple to spread out. The radius of the ripple grows at a steady rate of 5 cm/s. What equation would model the ripple exactly 6 s after it lands in the puddle?

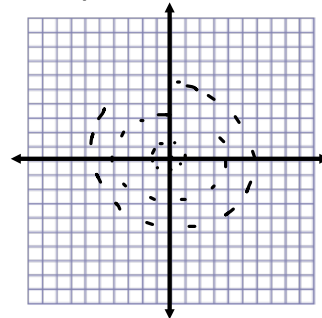
$$r = 5 \text{ cm/s} \times 6 \text{ s}$$

$$= 30 \text{ cm}$$

$$x^2 + y^2 = 30^2$$

$$x^2 + y^2 = 900$$

equation of the ripple at 6 seconds



4. Two satellites are orbiting the moon. The path of one has the equation $x^2 + y^2 = 1\,440\,000$. The other satellite is 200 m closer to the moon than the first. In one orbit, how much further does the first satellite travel than the second one? We need circumference of both circles $C = 2\pi r$

Sat. 1

$$x^2 + y^2 = 1\,440\,000$$

$$\sqrt{r^2} = \sqrt{1\,440\,000}$$

$$r = 1200 \text{ m}$$

$$C = 2\pi(1200)$$

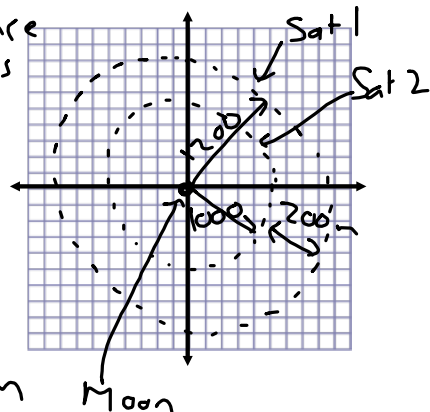
$$= 7539.8 \text{ m}$$

Sat 2

$$r = 1000 \text{ m}$$

$$C = 2\pi(1000)$$

$$= 6283.2 \text{ m}$$



$$7539.8 - 6283.2 = 1256.6 \text{ m}$$

\therefore The first satellite travels 1256.6 m further.

