May 20, 2019, Monday

Use the information provided to write the general conic form equation of each circle.

1) $(x-3)^2 + (y-2)^2 = 36$

  A) $x^2 + y^2 + 6x + 4y - 23 = 0$
  B) $x^2 + y^2 + 2x + 10y - 1270 = 0$
  C) $x^2 + y^2 - 4x + 6y - 23 = 0$
 *D) $x^2 + y^2 - 6x - 4y - 23 = 0$

Use the information provided to write the

2) $x^2 + y^2 + 20x + 2y + 76 = 0$

  A) $(x-1)^2 + (y-10)^2 = 625$
 *B) $(x+10)^2 + (y+1)^2 = 25$
  C) $(x-10)^2 + (y+1)^2 = 25$
  D) $(x+10)^2 + (y+1)^2 = 625$

Use the information provided to write the general conic form equation of each circle.

1) $(x-3)^2 + (y-2)^2 = 36$

  A) $x^2 + y^2 + 6x + 4y - 23 = 0$
  B) $x^2 + y^2 + 2x + 10y - 1270 = 0$
  C) $x^2 + y^2 - 4x + 6y - 23 = 0$
  D) $x^2 + y^2 - 6x - 4y - 23 = 0$

Use the information provided to write the standard form equation of each circle.

2) $x^2 + y^2 + 20x + 2y + 76 = 0$

  A) $(x-1)^2 + (y-10)^2 = 625$
  B) $(x+10)^2 + (y+1)^2 = 25$
  C) $(x-10)^2 + (y+1)^2 = 25$
  D) $(x+10)^2 + (y+1)^2 = 625$

Study Guide   Name _____

| **Example** | **You Try** |

1) Write an equation of the circle with a radius of 5 and center at (1,−4).

Equation: $(x - 1)^2 + (y = 4)^2 = 5^2$

$(x - 1)^2 + (y + 4)^2 = 25$

2) Write an equation of the circle with a radius of 2 and center at (2, 5).

Equation: $(x + 2)^2 + (y - 5)^2 = 2^2$

$(x - 2)^2 + (y - 5)^2 = 4$

3) Convert to the general form of a circle
$$(x - 4)^2 + (y - 1)^2 = 9$$

$(x-4)(x-4) + (y-1)(y-1) = 9$ $Ax^2 + By^2 + Cx + Dy + E = 0$

$x^2 - 4x - 4x + 16 + y^2 - 1y - 1y + 1 = 9$

$x^2 - 8x + 17 + y^2 - 2y \; \underline{-9 \; -9}$
$\qquad\qquad\qquad\qquad -9 = 0$

$x^2 + y^2 - 8x - 2y + 8 = 0$

4) Convert to the general form of a circle
$$(x - 3)^2 + (y + 8)^2 = 25$$

$(x-3)(x-3) + (y+8)(y+8) = 25$

$x^2 - 3x - 3x + 9 + y^2 + 8y + 8y + 64 = 25$

$x^2 - 6x + 73 + y^2 + 8y = \underline{-25 \; -25}$

$x^2 + y^2 - 6x + 8y + 48 = 0$

5) What is the center and radius of the circle whose equation is
$$x^2 + y^2 - 14x + 4y - 11 = 0$$

$x^2 - 14x \qquad y^2 + 4y \qquad = 11$ (+11 +11)

$(x - 7)^2 + (y + 2)^2 = 11 + 49 + 4$

$(x - 7)^2 + (y + 2)^2 = 64$

Center: (7 , -2); r: 8

$\sqrt{r^2} = \sqrt{64}$
$r = 8$

6) What is the center and radius of the circle whose equation is
$$x^2 + y^2 - 8x + 4y - 6 = 0$$

$x^2 - 8x \qquad y^2 - 4y \qquad = 6$ (+16 16)

$(x - 4)^2 + (y - 2)^2 = 6 + 16 + 4$

$(x - 4)^2 + (y - 2)^2 = 26$

Center: (4 , 2); r: $\sqrt{26}$

$\sqrt{r^2} = \sqrt{26}$

7) Circle C has a center of (3, 4) and a radius of 5. Does the point (0, 10) lie on circle C?

$(x - h)^2 + (y - k)^2 = r^2$ $x \; y$? (0,10)

$(x-3)^2 + (y-4)^2 = 5^2$

$(0-3)^2 + (10-4)^2 \; ? \; 25$

$9 + 36 \; ?\!=\! 25$

Yes/No? __NO__ $45 \ne 25$

8) Circle C has a center of (4, 1) and a radius of 8. Does the point (-4, 9) lie on circle C?

$(x - h)^2 + (y - k)^2 = r^2$

$(x-4) + (y-1)^2 \; ? \; 8^2$

$(-4-4) + (9-1)^2 \; ? $

$-8 + 8 = 0$

Yes/No? __NO__

9) A circle has center C(3,1) and A(5,3) is a point on the circle. Does the point P(3,-1) fall on the circle?

$CA = \sqrt{(5 - 3)^2 + (3 - 1)^2} = \sqrt{4 + 4}$ ($x_2 y_2$)
$\quad = \sqrt{8}$

$CP = \sqrt{(3 - 3)^2 + (-1 - 1)^2} = \sqrt{0 + 4}$
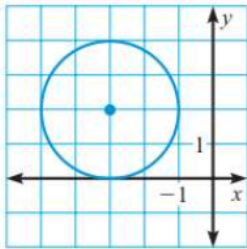$\quad = 2$

Since CA ___≠___ CP (choose one: = or ≠), point P **doesn't** (chose one: does or doesn't) fall on the circle.

10) A circle has center C(2, 3) and A(5,-1) is a point on the circle. Does the point P(-1,7) fall on the circle?

$CA = \sqrt{(5 - 2)^2 + (-1 - 3)^2} = \sqrt{9 + 16}$
$\quad = \sqrt{3^2} \qquad = 5$

$CP = \sqrt{(-1 - 2)^2 + (7 - 3)^2}$
$\quad = 5$

Since CA __=__ CP (choose one: = or ≠), point P **does** (chose one: does or doesn't) fall on the circle.

11) Find the equation of the circle, in standard form for the following circle.

Center: (_-3_, _2_) radius = _2_
Equation: $(x - 3)^2 + (y - 2)^2 = 2^2$
$(x + 3)^2 + (y - 2)^2 = 4$

12) Find the equation of the circle, in standard form for the following circle.

Center: (___, ___) radius = ___
Equation: $(x \quad)^2 + (y \quad)^2 = \_\_\_^2$
$(x \quad)^2 + (y \quad)^2 = \_\_\_$

13) Given the points (-4,10) and (-7, -4), find the distance.

$= \sqrt{(-7 - -4)^2 + (-4 - 10)^2}$
$= 14.3$

14) Given the points (-3,-9) and (-2, -6), find the distance.

$= \sqrt{(\quad - \quad)^2 + (\quad - \quad)^2}$
$= _____$

15) Find the distance of the line segment graphed below.

Points: (_5_, _5_) & (_1_, _-2_)

$= \sqrt{(1 - 5)^2 + (-2 - 5)^2}$
$= 9.2$

16) Find the distance of the line segment graphed below.

Points: (___, ___) & (___, ___)
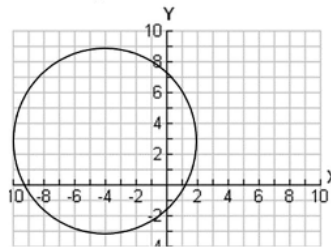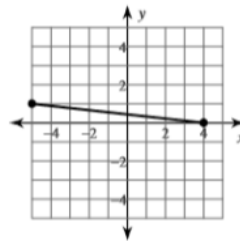
$= \sqrt{(\quad - \quad)^2 + (\quad - \quad)^2}$
$= _____$
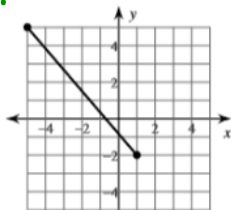
17) Write the equation of the line parallel to $y = 3x - 4$, and goes through (3,-4).

$m = 3$
$m_{//} = 3$
$y - y_1 = m(x - x_1)$

$y = mx + b$
$-4 = 3(3) + b$
$-4 = 9 + b$
$\underline{-9 \quad -9}$
$-13 = b$

$y = mx + b$
$y = 3x - 13$

18) Write the equation of the line parallel to $y = \frac{-3}{5}x + 2$, and goes through (-4,5)

$m = \_\_\_$
$m_{//} = \_\_\_$
$y - y_1 = m(x - x_1)$

**19) Write the equation of the line perpendicular to $y = 3x - 4$, and goes through (3,-4).**

$m = 3$
$m_\perp = -1/3$
$y - y_1 = m(x - x_1)$

$y = mx + b$
$-4 = -\frac{1}{3}(3) + b$
$-4 = -1 + b$
$\underline{+1 \quad +1}$
$-3 = b$

$y = mx + b$
$y = -\frac{1}{3}x - 3$

20) Write the equation of the line perpendicular to $y = -2x - 2$ and goes through (4,1).

$m = \_\_\_$
$m_\perp = \_\_\_$
$y - y_1 = m(x - x_1)$

Find the midpoint of the line segment with the given endpoints.

1) $(-4, 2)$, $(6, 0)$
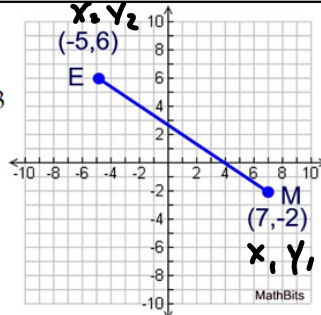   A) $(16, -2)$ B) $(1, 1)$
   C) $(-5, 1)$ D) $(-1, 3)$

May 21, 2019, Tuesday

Find the distance betw
necessary.

2)

A) 2.8   B) 2.4
C) 9.1   D) 5.1

Find the distance between each pair of points. Round your answer to the nearest tenth, if necessary.

2)
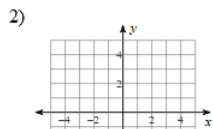
A) 2.8   B) 2.4
C) 9.1   D) 5.1

IST
2ND

9. Given $\overline{ME}$ as shown at the right. Find the coordinates of partition point P that divides directed segment $\overline{ME}$ into a 1:3 ratio.

Choose:
   ○ $(-2, 4)$ |||
   ○ $(2, 1)$
   ○ $(4, 0)$
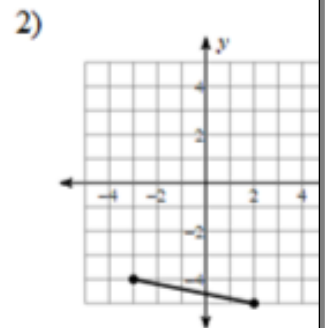   ○ $(1, 2)$

x_2, y_2
(-5,6)
E
M
(7,-2)
x_1, y_1

$$\left(7 + \frac{1}{1+3}(-5 - 7), \ -2 + \frac{1}{1+3}(6 - {}^-2)\right)$$
$$7 + \frac{1}{4}(-12), \ -2 + \frac{1}{4}(8)$$
$$(4 \qquad , \quad 0)$$

4

21) Given the points A(-3,4) and B(-7,12), find the coordinates of the point P on the directed line segment AB that partitions in the ratio of 1:3

$x_1 y_1$ $x_2 y_2$

$a \to b$

1:3 =

$\Delta x = x_2 - x_1 = \left(-3 + \frac{1}{1+3}(-7-3), \; 4 + \frac{1}{1+3}(12-4)\right)$

A(-3, 4)

−4 6

$(x, y) = \left(x_1 + \frac{a}{a+b}(x_2-x_1), \; y_1 + \frac{a}{a+b}(y_2-y_1)\right)$

22) Given the points $P(2, -1)$ & $Q(-9, -6)$, find the coordinates of the point S on the directed line segment $\overline{PQ}$ that partitions $\overline{PQ}$ into the ratio 3 : 2?

3:2 =

$\Delta x = x_2 - x_1 = $ $2 + \frac{3}{3+2}(-9-2) = 2.8$

$\Delta y = y_2 - y_1 = $

P(2, -1) $-1 + \frac{3}{3+2}(-6--1) = -4$

S = (−4.6 , −4)

23) Find the coordinates of P so that P partitions AB. If A(-1,2) and B(7,14), find the location of point P that is ¼ the distance from point A.   1:4

$a = 1$ $b = 4$

A————P————————B

$\Delta x = x_2 - x_1 =$
$\Delta y = y_2 - y_1 =$

A(-1, 2) $\left(-1 + \frac{1}{1+4}(7-1), \; 2 + \frac{1}{1+4}(14-2)\right)$

P = (6 , 4.4)

24) Find the coordinates of P so that P partitions AB. If A(-2,4) and B(7,-2), find the location of point P that is 1/3 the distance from point A.

$\Delta x = x_2 - x_1 = $ $-2 + \frac{1}{1+3}(7-2) =$
$\Delta y = y_2 - y_1 = $

A(-2, 4) $4 + \frac{1}{1+3}(-2-4) =$

P = (0.25 , 2.5)

25) Find the midpoint of (4,10) and (-7, -4)

$\left(\frac{4 + -7}{2}, \; \frac{10 - 4}{2}\right)$

$\left(-\frac{3}{2}, \; 3\right)$

$(-1.5, \; 3)$

26) Find the midpoint of (-3,-9) and (-2, -6)

$\left(\frac{-3 + -2}{2}, \; \frac{-9 + -6}{2}\right)$

$\left(\frac{-5}{2}, \; \frac{-15}{2}\right)$

27) Use the two-way frequency table to answer the following questions.

	Male	Female	Total
Born in GA	7	5	12
Not Born in GA	16	13	29
Total	23	18	41

a)   P(Female) = $\frac{18}{41}$

b)   P(Female ∩ Born in GA) = $\frac{5}{41}$

c)   P(Female|Born in GA) = $\frac{5}{18}$

d)   P(Male ∪ Not born in GA) = $\frac{16}{41}$

28) A random survey was conducted about gender and hair color. This table records the data.

Hair Color

	Brown	Blonde	Red	Total
Male	548	876	82	1,506
Female	612	716	66	1,394
Total	1,160	1,592	148	2,900

a)   P(Male) = $\frac{1506}{2900}$

b)   P(Male ∩ Blonde hair) = $\frac{876}{2900}$

c)   P(Male|Brown hair) = $\frac{548}{1160}$

d)   P(Female ∪ Red hair) = $\frac{66}{2900}$

5

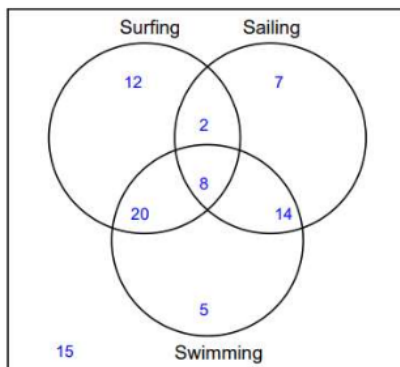**29) Determine which events are independent.**

$$P(A \cap B) = P(A) \cdot P(B)$$

a) P(A) = 0.15; P(B) = 0.20; P(A and B) = 0.35.

b) P(A) = 0.12; P(B) = 0.4; P(A and B) = 0.048.

c) P(A) = 0.15; P(B) = 0.24; P(A and B) = 0.09.

d) P(A) = 0.6; P(B) = 0.15; P(A and B) = 0.21.

30) Determine which events are independent.

$$P(A \cap B) = P(A) \cdot P(B)$$

a) P(A) = 0.24; P(B) = 0.2; P(A and B) = 0.048.

b) P(A) = 0.9; P(B) = 0.4; P(A and B) = 0.13.

c) P(A) = 0.64; P(B) = 0.1; P(A and B) = 0.74

d) P(A) = 0.45; P(B) = 0.65; P(A and B) = 0.20.

31) A magician showed a magic trick where he picked one card from a standard deck. What is the probability of selecting a red or black card from the deck of cards?

32) You roll a six- sided die. What is the probability of rolling an even or odd number?

33) Find the probability of each given situation.

a) You roll a dice 4 times. Find the probability of rolling 4's all four times? _____

b) You roll a dice 4 times. Find the probability of rolling 1's all four times? _____

34) Find the probability of each given situation.

a) You roll a dice 3 times. Find the probability of rolling 3's all three times? _____

b) You roll a dice 3 times. Find the probability of rolling 2's all three times? _____

35) Use the venn diagram to answer the questions.

a) How many students either surf or swim? _____

b) How many students do not like either Surfing or Swimming ?_____

c) Find P(Surf ∩ Sail ∩ Swim). _____

d) Find P(Sailing) = _____

e) Find P(Surfing) = _____

36) Use the Venn diagram to answer the questions.
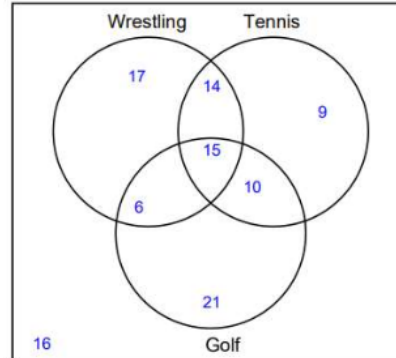
a) How many students either golf or wrestle? _____

b) How many students do not like either Tennis or Golf ? _____

c) Find P(Wrestle ∩ Tennis ∩ Golf). _____

d) Find P(Tennis) = _____

e) Find P(Wrestling) = _____

May 22, 2019, Wednesday

Given the following spinner, determine the probability:

P(orange)
P(red or green)
P(not red)
P(pink)

The table shows the results of a spinner experiment. Find the experimental probability.

Number	Occurrences
1	6
2	11
3	19
4	14

spinning a 4

37) In a bowl of marbles, there are 10 red ones, 6 green ones, and 8 blue ones. Mary will choose 2 marbles at random, <u>with replacement</u>. What is the probability that she will choose

a) both red marbles

b) Red and Blue marble

38) A bag contains 4 white, 3 blue, and 6 red marbles. A marble is drawn from the bag, <u>replaced</u>, and another marble is drawn. What is the probability that she will choose

a) both white marbles

b) Blue and white

39) In a bowl of marbles, there are 10 red ones, 6 green ones, and 8 blue ones. Mary will choose 2 marbles at random, <u>without replacement.</u> What is the probability that she will choose

a) both red marbles

b) Red and Blue marble

40) A bag contains 4 white, 3 blue, and 6 red marbles. A marble is drawn from the bag, is <u>not replaced</u>, and another marble is drawn.

a) both white marbles

b) Blue and white

41) Keisha has a stack of 8 baseball cards, 5 basketball cards, and 6 soccer cards. If she selects a card at random from the stack, what is the probability that it is a baseball or a soccer card?

42) A basket contains three apples, three peaches, and four pears. You randomly select a piece of fruit. What is the probability that you select an apple or a pear?

May 23, 2019 Thursday

Write two good short answer questions for a final exam
& include the answer.

May 24, 2019, Friday

Write two good multiple choice questions for a final exam
& include the answer.