$U = \{1,2,3,4,5,6,7,8,9\}$ $A = \{1,3,5,7\}$

$B = \{3,5,6,7,8\}$ $C = \{2,3,7,8,9\}$

3) $A \cup B$

$= \{1,3,5,6,7,8\}$

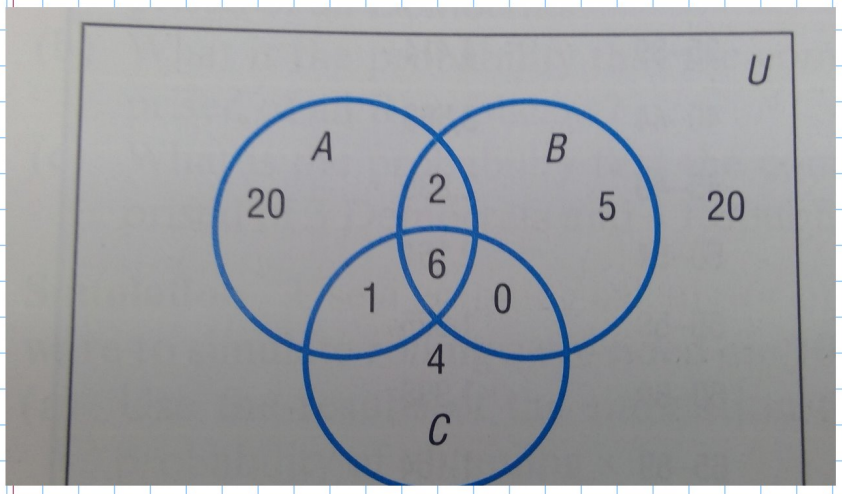
5) $A \cap C$

$= \{3,7\}$

9) $\overline{B \cap C}$

$B \cap C = \{3,7,8\}$

$\overline{B \cap C} = \{1,2,4,5,6,9\}$



13) $20+1+6+2 = 29$

14) $20+1+6+2+0+5 = 34$

15) $1+6 = 7$

16) $20+1+4+20 = 45$

17) $5+20 = 25$

18) $2+5 = 7$

29) In how many ways can you award 3 prizes if 60 people enter drawing if:

a) there's a 1st, 2nd, 3rd place prize

$${}_{60}P_3 = 205,320$$

b) all the prizes are the same

$${}_{60}C_3 = 34,220$$

34) $5 \cdot 3 \cdot 4 = 60$

35) $\underline{24} \cdot \underline{9} \cdot \underline{10} \cdot \underline{10} \cdot \underline{10} = 216{,}000$
(24: letter)

40) 5 men
8 women

a) ${}_5C_1 \cdot {}_8C_3 = 280$

b) ${}_8C_2 \cdot {}_5C_2 = 280$

4 person committee
at least 1 man

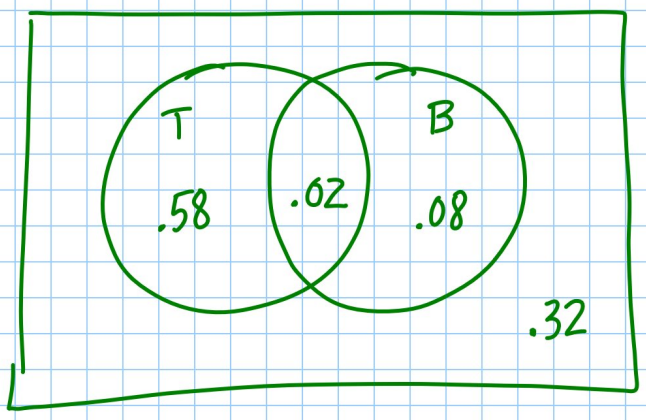
c) ${}_5C_1 \cdot {}_8C_3 + {}_5C_2 \cdot {}_8C_2 + {}_5C_3 \cdot {}_8C_1$
$= 280 + 280 + 80$
$= 640$

46) 3 40W
6 60W
11 75W
} 20 total

$p(40) = \frac{3}{20}$

$p(\text{not } 75) = \frac{9}{20}$

52) $p(T) = 0.6$
$p(B) = 0.1$
$p(T \cap B) = 0.02$



a) $p(T \cup B) = 0.68$

b) 0.58

c) 0.32

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

p32
48) $r=4 \quad (h,k)=(2,-3)$

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

$(x-2)^2+(y+3)^2=4^2$ ← STANDARD

$x^2-4x+4+y^2+6y+9=16$

$x^2+y^2-4x+6y-3=0$ ← general

58) $x^2+y^2-6x+2y+9=0$

$x^2-6x+9 \quad +y^2+2y+1 = -9+9+1$

$\left(\frac{-6}{2}\right)^2=(-3)^2=9 \qquad \left(\frac{2}{2}\right)^2=1^2=1$

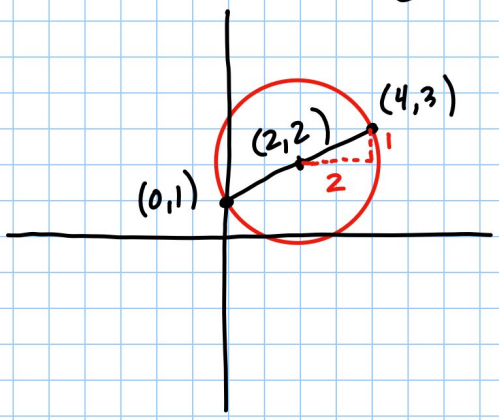
$(x-3)^2+(y+1)^2=1$ ← r^2 $\quad r=\sqrt{1}=1$

center $=(3,-1)$, $r=1$

68) (4,3) and (0,1)

center $=\left(\frac{0+4}{2},\frac{1+3}{2}\right)$

$(2,2)$



$2^2+1^2=r^2$

$4+1=5=r^2$

$r=\sqrt{5}$

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

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

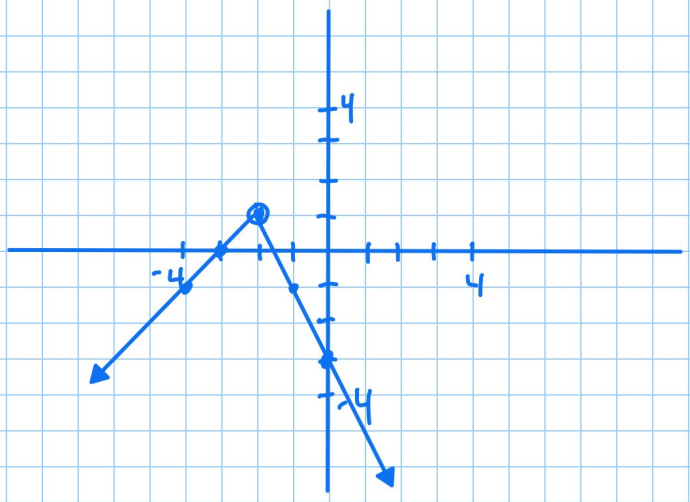
$x^2+y^2-4x-4y+3=0$

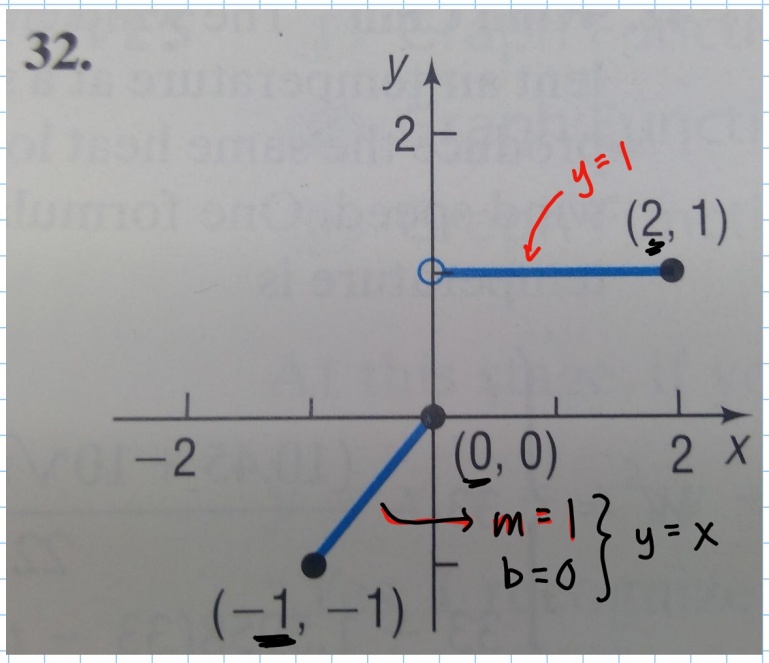
General: $x^2+y^2+ax+by+c=0$

p133

22) $f(x)=\begin{cases} x+3 & x<-2 \\ -2x-3 & x\geq -2 \end{cases}$

	x	y	
x+3	-4	-1	
	-3	0	
	-2	1	← open
-2x-3	-2	1	← closed
	-1	-1	
	0	-3	





$$f(x) = \begin{cases} x & -1 \le x \le 0 \\ 1 & 0 < x \le 2 \end{cases}$$

PPP

1) Find standard and general forms of circle with $r = 12$ and center $= (-7, -5)$.

2) Find the center and radius of the circle

$$x^2 + y^2 - 6x + 14y - 6 = 0$$

3) Find the general form of the circle with endpoints of a diameter at $(-10, -7)$ and $(12, -21)$

4) Use $U = \{7, 14, 21, 28, 35, 42, 49, 56, 63, 70\}$

$A = \{14, 28, 42, 56\}$

$B = \{7, 14, 21, 28, 35\}$

a) $\bar{B} \cup A$

b) $\bar{A} \cap B$

c) $A \cup B$

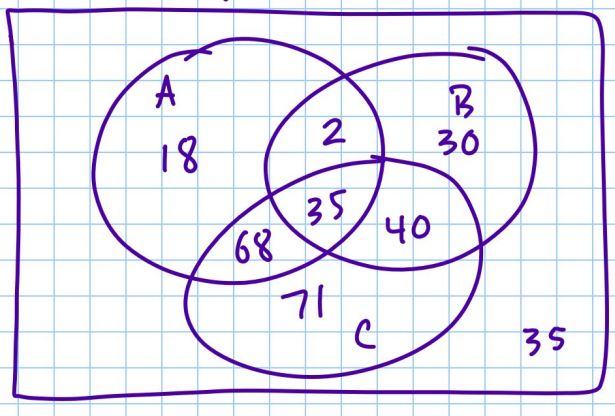
5) A restaurant serves 8 appetizers, 10 entrees, and 6 desserts. How many meal plans are possible?

6) A high school ID is made with 7 digits followed by 2 letters. How many IDs are possible if

a) digits and letters can be repeated

b) digits cannot be repeated but letters can

7)



a) How many are not in C?

b) How many are in B or C?

c) How many are in A but neither B nor C?

8) In how many different ways are there to choose 5 people out of 75 if

A) you're drawing for different prizes

B) you're drawing for 5 prizes that are the same

9) In a shipment of TI-83 calculators, 3% have a defective screen, 1% have a defective button, and 0.4% have both defects.

A) Venn it!

one chosen at random:

B) P(neither defect)

C) P(either defect)

D) P(exactly one of the defects)

10) Graph $f(x) = \begin{cases} -4x+1 & -2 < x \leq 1 \\ 3x-3 & x > 1 \end{cases}$

11) Write equation given by graph: