VD: Unit 9 Topic 1 Part 1

(Pick 4 questions to practice from both Question 1 and Question 2)

Question1:

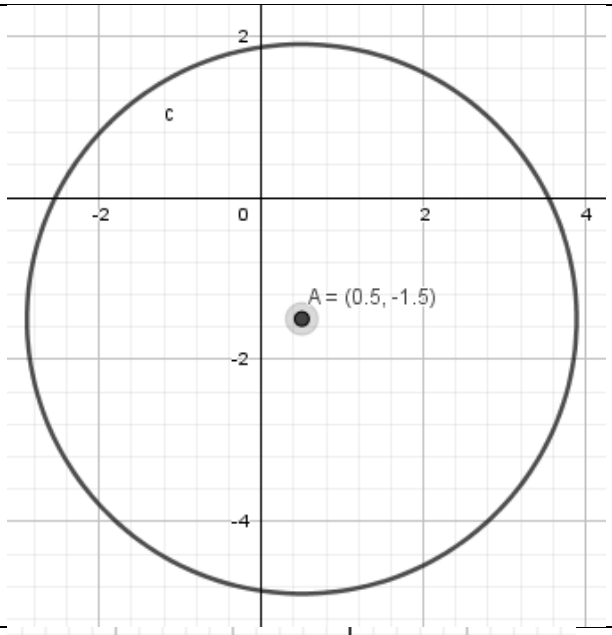
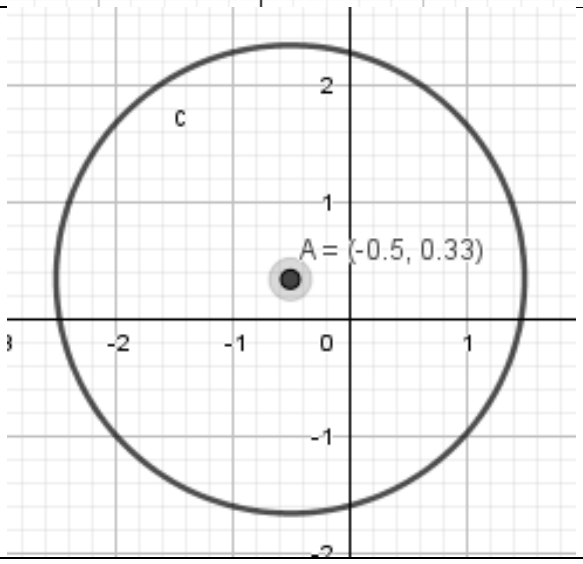
Given the general form of the equation of a circle, find

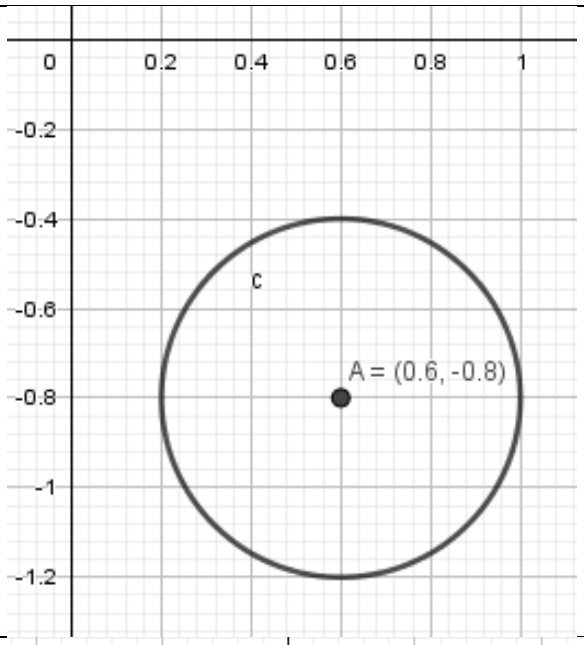
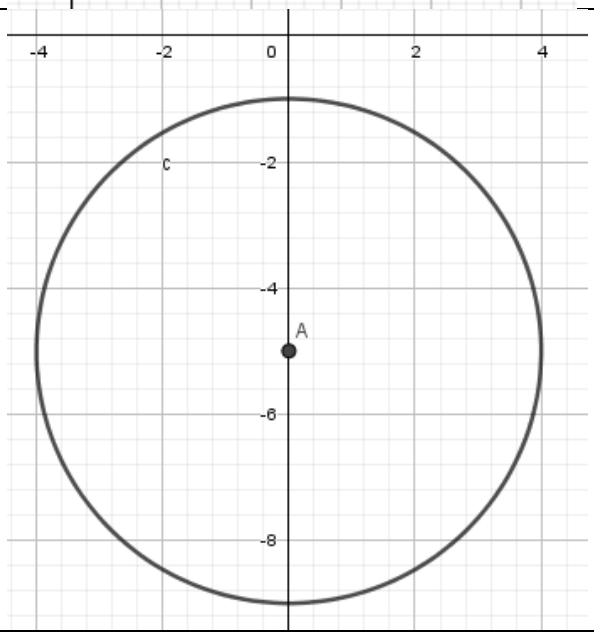
(a) the standard form of the circle

(b) identify the center and the radius

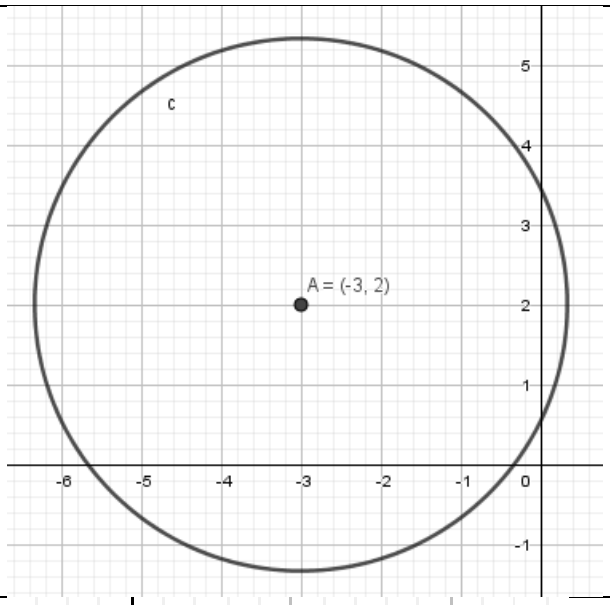
(c) the x and y intercepts

(d) the graph of the circle

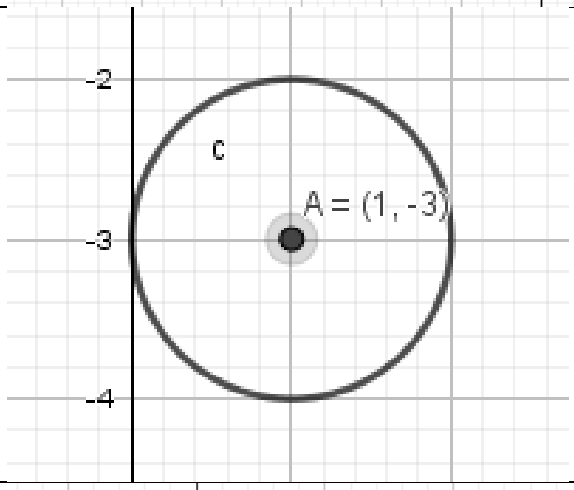
Given	Solution
1. $x^2 + y^2 - x + 3y = 9$	
2. $x^2 + x + y^2 - \frac{2}{3}y = \frac{131}{36}$	

3. $5x^2+5y^2-6x+8y+\frac{21}{5}=0$	
4. $x^2+y^2+10y+9=0$	

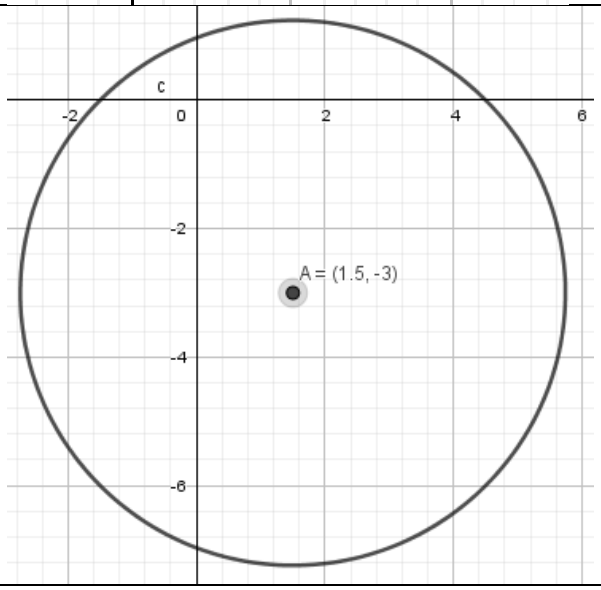
5. $9x^2+9y^2+54x-36y+17=0$

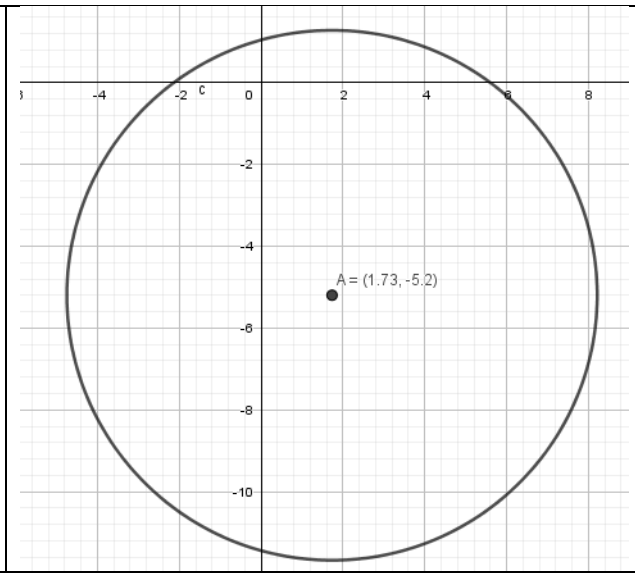


6. $x^2+y^2-2x+6y+9=0$



7. $\frac{4}{3}x^2+\frac{4}{3}y^2-4x+8y=9$



8. $\frac{2}{\sqrt{3}}x^2+\frac{2}{\sqrt{3}}y^2-4x+12y=8\sqrt{3}$	

Question 2:

Given a circle C_1 and a point P on C_1,

(a) find all possible equations of a circle C_2 with a radius of r that intersect C_1 at exactly one point, P.

(b) graph both C_1 and all possible C_2 to verify your answer from (a)

Given C_1, P	Radius of C_2	C_2
1. $(x-2)^2+(y-3)^2=13$, $P(4,6)$	$\sqrt{2}$	$\left(x-4-\frac{2\sqrt{2}}{\sqrt{13}}\right)^2+\left(y-6-\frac{3\sqrt{2}}{\sqrt{13}}\right)^2=2$, $\left(x-4+\frac{2\sqrt{2}}{\sqrt{13}}\right)^2+\left(y-6+\frac{3\sqrt{2}}{\sqrt{13}}\right)^2=2$
2. $(x-2)^2+(y-3)^2=13$, $P(0,6)$	5	$\left(x-\frac{10}{\sqrt{13}}\right)^2+\left(y-6+\frac{15}{\sqrt{13}}\right)^2=25$, $\left(x+\frac{10}{\sqrt{13}}\right)^2+\left(y-6-\frac{15}{\sqrt{13}}\right)^2=25$
3. $(x-5)^2+y^2=10$, $P(4,3)$	3	$\left(x-4-\frac{3}{\sqrt{10}}\right)^2+\left(y-3+\frac{9}{\sqrt{10}}\right)^2=9$, $\left(x-4+\frac{3}{\sqrt{10}}\right)^2+\left(y-3-\frac{9}{\sqrt{10}}\right)^2=9$
4. $(x-5)^2+y^2=10$, $P(8,-1)$	$2\sqrt{10}$	$(x-14)^2+(y+3)^2=40$, $(x-2)^2+(y-1)^2=40$

5. $(x-4)^2+(y-3)^2=25$, $P(0,0)$	4	$\left(x-\frac{16}{5}\right)^2+\left(y-\frac{12}{5}\right)^2=16$, $\left(x+\frac{16}{5}\right)^2+\left(y+\frac{12}{5}\right)^2=16$
6. $(x+3)^2+(y-4)^2=25$, $P(-6,0)$	$5\sqrt{2}$	$\left(x+6-3\sqrt{2}\right)^2+\left(y-4\sqrt{2}\right)^2=50$, $\left(x+6+3\sqrt{2}\right)^2+\left(y+4\sqrt{2}\right)^2=50$
7. $(x+4)^2+(y-4)^2=18$, $P(-7,1)$	$6\sqrt{2}$	$(x+1)^2+(y-7)^2=72$, $(x+13)^2+(y+5)^2=72$
8. $(x+10)^2+(y+3)^2=20$ $P(-12,-7)$	$\sqrt{5}$	$(x+11)^2+(y+5)^2=5$, $(x+13)^2+(y+9)^2=5$