**NAME: OGBUDO PRAISE IFEANYI**

**MATRIC NO: 19/ENG02/040**

**COURSE CODE: MAT 102**

**COURSE TITLE: GENERAL MATHEMATICS II**

**QUESTION**

Find the point of intersection of the following line on the circle

1) x - y -14 = 0 and x2 + y2 - 6x + 8y = 0

2) 2x + y -10 = 0 and x2 + y2 + 4x - 6y = 0

3) x - 5y - 2 = 0 and x2 + 25y2 - 6xy - 16 = 0

**SOLUTION**

1. x - y -14 = 0 and x2 + y2 - 6x + 8y = 0

y=-14+x……eqn 1

y2=x2-14x-14x+196

=x2-28x+196

x2+x2-28x+196-6x+8x-112=0

2x2-26x+84=0

2x2-12x-14x+84x=0

2x(x-6)-14(x-6) =0

(2x-14) (x-6) =0

2x-14=0 & x-6=0

X=7 & x=6

Subst x=7 into eqn 1

y=-14+7

y=-7

therefore, the point of intersection is (7, -7)

subst x=6 into eqn 1

y=-14+6

y=-8

therefore, the point of intersection is (6, -8)

1. 2x + y -10 = 0 and x2 + y2 + 4x - 6y = 0…eqn 1

y=10-2x

Subst y=10-2x into eqn 1

x2+y2+4x-6y=0

x2+(10-2x)2+4x-6(10-2x) =0

x2+4x2-40x+100+4x-60+12x

5x2-24x+40

This eqn cannot be further resolved

1. x - 5y - 2 = 0 and x2 + 25y2 - 6xy - 16 = 0

x=5y+2…. eqn 1

x2=(5y+2) (5y+2)

x2=25y2+10y+10y+4

6xy=6y(5y+2)

=30y2+12y

Subst x=5y+2 into x2 + 25y2 - 6xy - 16 = 0

25y2+20y+4+25y2-30y2-12y-16=0

25y2+25y2-30y2+20y-12y+4-16=0

20y2+8y-12=0

20y2+20y-12y-12=0

20y(y+1)-12(y+1) =0

20y-12=0 & y+1=0

y=0.6 & y=-1

Subst y=0.6 into eqn 1

x=5(0.6) +2

=3+2

=5

Point of interception = (5,0.6)

Subst y=1 into eqn 1

x=5(-1) +2

=-5+2

=-3

Point of interception = (-3,1)