# Assignment 1

## Part A

1. **(10,10)(15,13)**

dx= 5

dy = 3

dx > dy

m = 3/5 < 1 -- therefore steps = 5

xInc = 5/5 = 1

yInc = 3/5 = 0.6

p1 = (10,10)

p2

x= 10+1 =11

y = 10+0.6 = 10.6

setPixel(round(11),round(10.6))

p2 = (11,11)

p3

x= 11+1 =12

y = 10.6+0.6 = 11.2

setPixel(round(12),round(11.2))

p3 = (12,11)

p4

x= 12+1 =13

y = 11.2+0.6 = 11.8

setPixel(round(13),round(11.8))

p4 = (13,12)

p5

x= 13+1 =14

y = 11.8+0.6 = 12.4

setPixel(round(13),round(12.4))

p5 = (14,12)

p6

x= 14+1 =15

y = 12.4+0.6 = 13

setPixel(round(15),round(13))

p6 = (15,13)

1. **(15,13)(10,10)**

dx= -5

dy = -3

dx < dy

m = -3/-5 < 1 -- therefore

therefore steps = 5

xInc = -5/5 = -1

yInc = -3/5 = -0.6

p1 = (15,13)

p2

x= 15-1 =14

y = 13-0.6 = 12.4

setPixel(round(14),round(12.4))

p2 = (14,12)

p3

x= 14-1 =13

y = 12.4-0.6 = 11.8

setPixel(round(13),round(11.8))

p3 = (13,12)

p4

x= 13-1 =12

y = 11.8-0.6 = 11.2

setPixel(round(12),round(11.2))

p4 = (12,11)

p5

x= 12-1 =11

y = 11.2-0.6 = 10.-6

setPixel(round(11),round(10.6))

p5 = (11,11)

p6

x= 11-11 =10

y = 10.6-0.6 = 10

setPixel(round(10),round(10))

p6 = (10,10)

1. **(9,3)(1,3)**

dx= --8

dy = 0

dx < dy

m = 0/-8 < 1 -- therefore therefore steps = 8

xInc = -8/8 = -1

yInc = 0/8 = 0

p1 = (9,3)

p2

x= 9-1 =8

y = 3-0 = 3

setPixel(round(8),round(3))

p2 = (8,3)

p3

x= 8-1 =7

y = 3-0 = 3

setPixel(round(7),round(3))

p3 = (7,3)

p4

x= 7-1 =6

y = 3-0 = 3

setPixel(round(6),round(3))

p4 = (6,3)

p5

x= 6-1 =5

y = 3-0 = 3

setPixel(round(5),round(3))

p5 = (5,3)

p6

x= 5-1 =4

y = 3-0 = 3

setPixel(round(4),round(3))

p6 = (4,3)

p7

x= 4-1 =3

y = 3-0 = 3

setPixel(round(3),round(3))

p7 = (3,3)

p8

x= 3-1 =2

y = 3-0 = 3

setPixel(round(2),round(3))

p8 = (2,3)

p9

x= 2-1 =1

y = 3-0 = 3

setPixel(round(1),round(3))

p9 = (1,3)

1. **(10,10)(13,15)**

dx= 3

dy = 5

dx < dy

m = 5/3 > 1 -- therefore steps = 5

xInc = 3/5 = 0.6

yInc = 5/5 = 1

p1 = (10,10)

p2

x = 10+0.6 = 10.6

y= 10+1 =11

setPixel(round(10.6), round(11))

p2 = (11,11)

p3

x = 10.6+0.6 = 11.2

y= 11+1 =12

setPixel(round(11.2),round(12))

p3 = (11,12)

p4

x = 11.2+0.6 = 11.8

y= 12+1 =13

setPixel(round(11.8),round(13))

p4 = (12,13)

p5

x = 11.8+0.6 = 12.4

y= 13+1 =14

setPixel(round(12.4),round(14))

p5 = (12,14)

p6

x = 12.4+0.6 = 13

y= 14+1 =15

setPixel(round(13),round(15))

p6 = (13,15)

In the DDA algorithm there are the x and y increments two different scenarios where dx or dy will be used as the steps. If m (dy/dx) is greater than 1? Dy will be used as the value of steps. If m is less than 1? Dx will be used as the value of steps.