11.   (3 points)
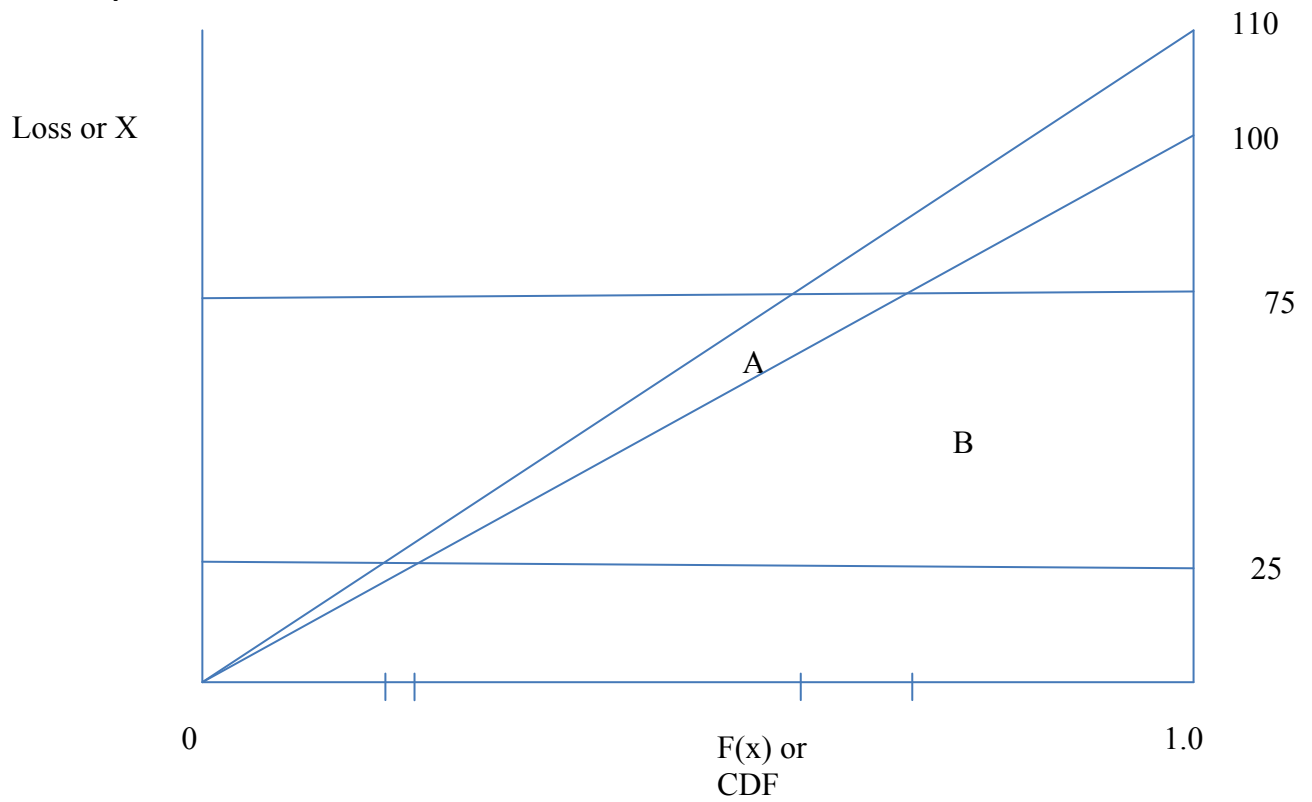
Losses follow a uniform distribution between $0 and $100.

Assume a 10% trend is applied uniformly to all losses.

Use a Lee diagram to calculate the implied trend for the layer $50 excess of $25. Label all relevant features of the diagram.
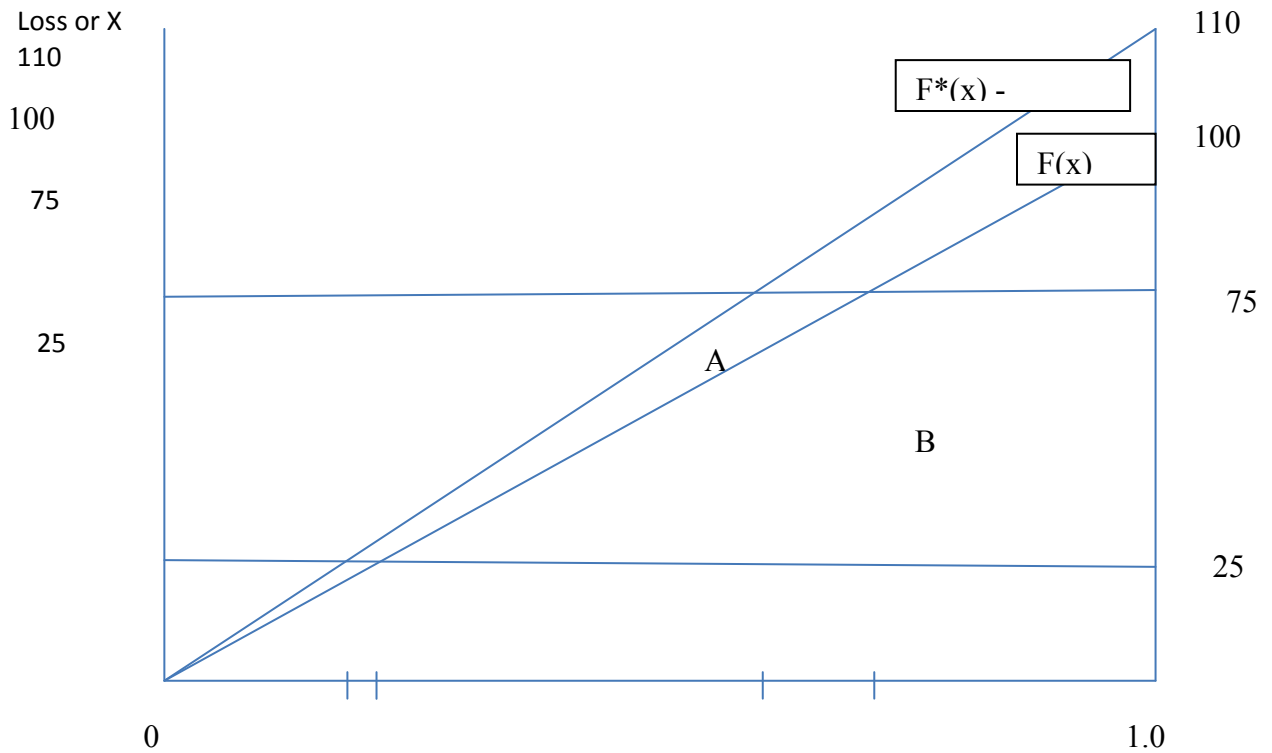
Question 11

Sample 1

E[x;25,75] = 50 [(1-25/100)+(1-75/100)]*1/2 = 25
E[x';25,75] = 50 [(1-25/110)+(1-75/110)]*1/2 = 27.27
Implied Trend = 27.27/25 -1 = 9.09%

Sample 2

Loss or X
110
100
75
25

0   1.0

110
F*(x) –
100
F(x)
75
A
B
25

Trend in layer = $\dfrac{a(E[x;75/1.1]-E[x;25/1.1]}{E[x;.75]-E[x,25]}$ –1

$E[x, 75] = \int_0^{75} \dfrac{x}{100}dx + \int_{75}^{100} \dfrac{75}{100}dx = 46.875$

$E[x, 25] = \int_0^{25} \dfrac{x}{100}dx + \int_{25}^{100} \dfrac{25}{100}dx = 21.875$

$E[x, 75/1.1] = \int_0^{68.8} \dfrac{x}{100}dx + \int_{68.8}^{100} \dfrac{68.8}{100}dx = 44.944$

$E[x, 25/1.1] = \int_0^{22.7} \dfrac{x}{100}dx + \int_{22.7}^{100} \dfrac{22.7}{100}dx = 20.124$

Trend in layer = 1.1 (44.944-20.124)/(46.875-21.875)-1 = .092