2.

a) f is a pdf if f(x) ≥ 0 , for all xϵ R, =1

1= + +

1= c [x2/2]10 +c [x]21 + c [3x- x2/2]32

1= c/2 + {2c- c} + {9 - 9c/2 – 6c + 2c}

1= c/2+ c+ 5c-9c/2

1= 2c

c=1/2

b) P(1.5< X < 2.5)

F(x)=

P(1.5 < X < 2.5)= P(X < 2.5) – P(X<1.5)

= F(2.5) – F(1.5)

= 1/2 (3. 10/4 – (10/4)2/2 ) - 5 - ( 1/2. 3/2- ¼)

= 0.4375

c) EX = + +

= []10 + []21 + [ ½ ( 3x2/2 – x3/3) ]32

= 1/6+ ¾+ { ½ ( 33/2 - 33/3)- (3 (4)2/2 - 23/3)}4

92- 90 + 16

= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12

= 18/12= 3/2

= 1.5

d) F(1)= ¼

e) - x2/2+ 3x- 4.3 =0

x= 2.367 (ignoring the other root)