

## ASSIGNMENT 4

*Probability and Statistics*

Guneev Kaur

102003259

COE11

Outputs :

Q1

```
Console Terminal x
~/
> x <- c(0,1,2,3)
> y <- (10*x)-12
> p <- c(0.1, 0.2, 0.2, 0.5)
> X <- weighted.mean(x,p)
> z <- sum(y*p)
> z
[1] 9
> |
```

Q2

```
Console Terminal x
~/
> f = function(t){(t*(0.1*exp(-0.1*t)))}
> E = integrate(f,0,Inf)
> E
10 with absolute error < 6.7e-05
> |
```

Q3

```
Console Terminal x
~/
> x = c(0,1,2,3,4)
> p = c(0.41, 0.37, 0.16, 0.05, 0.01)
> weighted.mean(x,p)
[1] 0.88
> sum(x*p)
[1] 0.88
> r = c(x%%p)
> r
[1] 0.88
> |
```

Q4

```
Console Terminal x
~/
> f1 = function(t)(t*(0.5*exp(-abs(t))))
> fm=integrate(f1,1,10)
> fm
0.3676297 with absolute error < 1.7e-14
> f2 = function(t)((t^2)*(0.5*exp(-abs(t))))
> sm=integrate(f2,1,10)
> sm
0.9169292 with absolute error < 6e-13
> v = as.numeric(sm[1])-(as.numeric(fm[1])^2)
> v
[1] 0.7817776
> |
```