# PROBABILITY & STATISTICS LAB – 6

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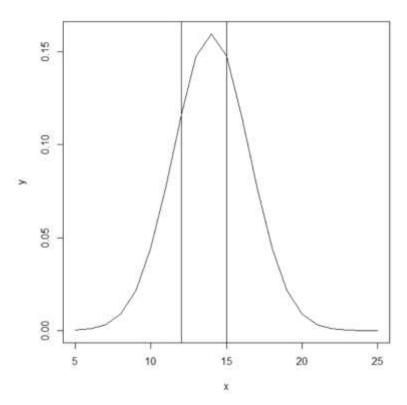
#### #q1

```
a=(pnorm(15,14,2.5)-pnorm(12,14,2.5)*1000)
b=(pnorm(18,14,2.5, lower.tail=FALSE)*1000)
c=(pnorm(18,14,2.5, lower.tail=TRUE)*1000)
print(round(a))
print(round(b))
print(round(c))
x=seq(5,25,by=1)
y=dnorm(x,14,2.5)
plot(x,y,type="l")
abline(v=12)
abline(v=15)
```

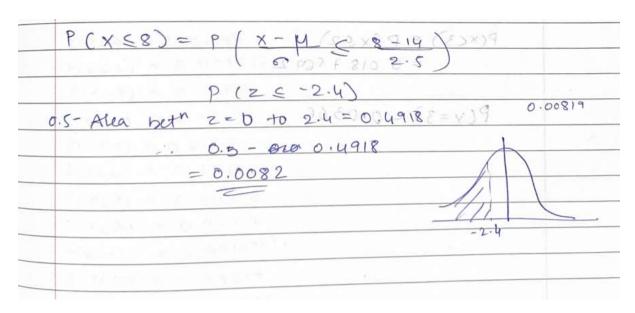
#### **OUTPUT:**

```
> #q1
>
> a=(pnorm(15,14,2.5)-pnorm(12,14,2.5)*1000)
> b=(pnorm(18,14,2.5, lower.tail=FALSE)*1000)
> c=(pnorm(18,14,2.5, lower.tail=TRUE)*1000)
> print(round(a))
[1] -211
> print(round(b))
[1] 55
> print(round(c))
[1] 945
> x=seq(5,25,by=1)
> y=dnorm(x,14,2.5)
> plot(x,y,type="l")
> abline(v=12)
> abline(v=15)
> |
```

## PLOT:



all but $n = 1000$ $y = 14$ $z = x - \mu$ $y = 2.45$ $P(12 \le x \le 15) = P(12 - 14 (x - \mu < 15 - 14))$ $= P(-0.8 \le x - \mu < 0.4)$ Atea but $z = 0$ to $z = 0.8$ $= P(-0.8 \le x - \mu < 0.4)$ $0.2881 + 0.1554$ $= 0.4485$ $P(x > 15) = P(x - \mu > 18 - 14)$ $= P(z > 0.44)$ $= P(z > 0.44)$ $0.5 - Atea but z = 0.44 0.5 - 0.548$	017	the m = 1000
$P(12 \le x \le 15) = P(12-14 (x-4) (15-14)$ $= P(-0.8 \le x-4 (0.4))$ Alea bet $2 = 0$ to $2 = 0.8$ + Area been $2 = 0$ to $7 = 0.4$ $0.2881 + 0.1554$ $= 0.4485$ $P(x>15) = P(x-4) 18-14$ $= P(2>0.44)$ $= P(2>0.44)$ $= P(2>0.44)$ $= P(2>0.44)$ $= P(3>0.44)$	ay	= 10
$P(12 \le x \le 15) = P(12-14 (x-H (15-14)))$ $= P(-0.8 \le 5-\mu (0.4))$ $= P(-0.8 \le$	_	6 = X - Mol 3 = 73 1 × 1 × 1
$P(12 \le x \le 15) = P(12-14 (x-4) (15-14)$ $= P(-0.8 \le x-4 (0.4))$ Alea bet 2=0 to 2=0.8 + Alea bee 2=0 to 7=0.4  0-288 + 0.1554  = 0.4455  = P(x>15) = P(x-4) 18-14  = P(2>0.44)  = P(2>0.44)  = P(2>0.44)  0.5- Alea bet 2=0.4  0.5- 0.4452	_	10000 AF M 3 = (1027) 9
$P(x) = P(-0.8 \le x - \mu \le 0.4)$ $= P(-0.8 \le x - \mu \le 0.4)$ $= P(x) = 0.44$ $= 0.44$ $= 0.44$ $= 0.44$ $= P(x) = 0.4$ $= P(x) = $	_	
$= P(-0.8 \le 5 - \mu \le 0.4)$ Atlea bet 2 = 0 to 2 = 0.8 + Alea bet 2 = 0 to 7 = 0.4 $0.2881 + 0.1554$ $= 0.4485$ $P(x>15) = P(x-\mu > 18-14)$ $= P(2>0.44)$ $= P(2>0.44)$ $= P(2>0.44)$ $0.5 - Alea bet 2 = 0.44$ $0.5 - 0.4854 = 0.5 - 0.4452$	_	P(12 = x = 15) = P(12-14 < x-4 = 15-14)
Alea bet $2 = 0$ to $2 = 0.8 \le 5 - \mu$ (0.4)  Alea bet $2 = 0$ to $2 = 0.8 \pm 4$ Alea bet $2 = 0$ to $7 = 0.4$ $0 - 2881 \pm 0.1554$ $= 0.4485$ $= 0.4485$ $= P(2 > 0.44)$		1 3 0 0
Atlea bet $z = 0$ to $z = 0.8 + Atlea bet z = 0 to z = 0.4 0.2881 + 0.1554 = 0.4485 = 0.4485 = P(x) = P(x - 4) = 18 - 14 = P(z) = 0.4 = P(z) = 0.4 = $		= P (-0.8 5 % - 1
P(x>15) = P(x-y) = P(x-y) = P(x>15) = P(x>15		4 (0.4)
P(x>15) = P(x-y) = P(x-y) = P(x>15) = P(x>15		Alea beth 2 =0 to Z=95 + 100
P(x>15) = P(x-y) =		
$P(x \ge 15) = P(x-y) = P(x-y) = P(x \ge 14)$ $= P(x \ge 15) = P(x-y) =$	12/11-	690 (0 4 Y ) 9 ( 5 1 0 ) ( ) ( 6 7 5 Y ) 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
$P(X \ge 15) = P(X - M > 18 - 14)$ $= P(2 \ge 000)$ $=$		
= P(2 > 0000)  = P(2 > 0000)  0. 6- Alea but 2 = 0 to 2 = 0.4  0. 6- October 0.5-0.4452		D(X>15) = P ( 11 11 11 11 11 11 11 11 11 11 11 11 1
= P(2 > 0000)  0. 6- Alea bet 2=0 to 2=04  0. 6- Octset 0.5-0.4452	_	7-11 > 18-14
0. 5- Alea bet 2=0 to 2=0.4. 1.6	_	- 24
0. 5- Alea bet 2=0 to 2=0.4		= 1(2 > on 1) 3 F 5 3 T A = 1 1 1
0-13-00+354 0.5-0.4452		
		0. 5- Alea but 2=0 to 2=0.4
= 0.0548 14 = (r=x)d		0.5-00484 0.5-014452
		= 0.0548 TA = (rexid



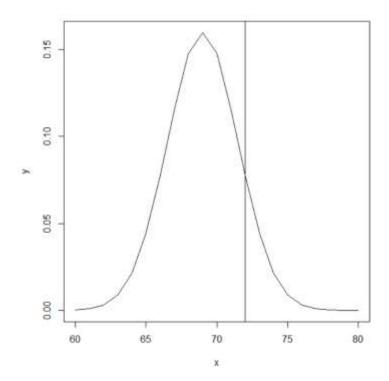
#### #q2

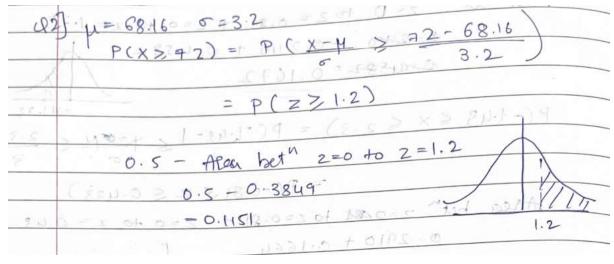
```
z=(pnorm(72,68.16,3.2,lower.tail=FALSE))*1000
print(round(z))
x=seq(60,80,by=1)
z=dnorm(x,68.16,3.2)
plot(x,y,type="l")
abline(v=72)
```

#### **OUTPUT:**

```
> #q2
>
> z=(pnorm(72,68.16,3.2,lower.tail=FALSE))*1000
> print(round(z))
[1] 115
> x=seq(60,80,by=1)
> z=dnorm(x,68.16,3.2)
> plot(x,y,type="l")
> abline(v=72)
> |
```

#### PLOT:





### #q3

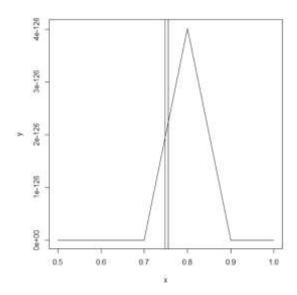
```
 \begin{split} & \text{m=(pnorm(0.756,0.7515,0.0020)-pnorm(0.748,0.7515,0.0020))*1000} \\ & \text{n=1000-m} \\ & \text{print(round(n))} \\ & \text{x=seq(0.5,1,by=0.1)} \\ & \text{y=dnorm(x,0.7515,0.0020)} \\ & \text{plot(x,y,type="l")} \\ & \text{abline(v=0.748)} \end{split}
```

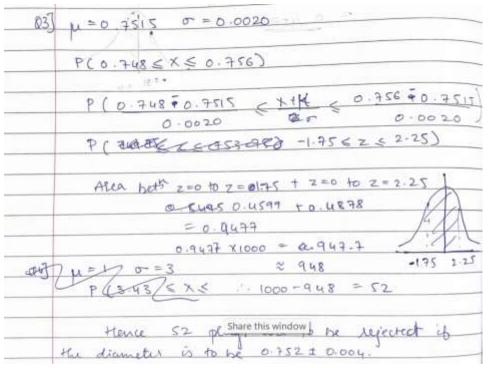
#### abline(v=0.756)

#### **OUTPUT:**

```
> #q3
>
> m=(pnorm(0.756,0.7515,0.0020)-pnorm(0.748,0.7515,0.0020))*1000
> n=1000-m
> print(round(n))
[1] 52
> x=seq(0.5,1,by=0.1)
> y=dnorm(x,0.7515,0.0020)
> plot(x,y,type="l")
> abline(v=0.748)
> abline(v=0.756)
> |
```

#### PLOT:





```
#q4
s=seq(-10,10,by=1)
#1)
x=pnorm(3.43,1,3)
y=pnorm(6.19,1,3)
z=y-x
print(z)
plot(s,dnorm(s,1,3),type="l")
abline(v=3.43)
abline(v=6.19)
#2)
x=pnorm(-1.43,1,3)
y=pnorm(2.3,1,3)
z=y-x
print(z)
plot(s,dnorm(s,1,3),type="l")
abline(v=-1.43)
abline(v=2.3)
```

#### OUTPUT:

QU) M=1 2 = 3
P(3.43 5 x 6.19) = P(3.43-1 5 8x-4 6.19-1)
A
-Alea beth z=0 toz=0.81 + z=0 toz=1.73
0.1672
P(-1.43 < x < 2.3) = P(-1.43-1 < 1-04 < 2.3-1)
Area beth 2=0000 to z=0.81 + 2=0 to z=0.43
= 0.4574000 = 0.1664
(57F.0 3 X 1 0 7
-0.81 6.4 -0.81 6.4 -0.81 6.4