

RESPONSI

1. a) Diket :

$$n = 10$$

dipilih 1 orang

Tanya :

Rumus untuk distribusi probabilitas X ?

Solusi :

$$p = \frac{1}{10} = 0,1 \rightarrow q = 0,9$$

$$b(x|10; 0,1) = C_x^{10} \cdot (0,1)^x \cdot (0,9)^{n-x}$$

$$P(X) = \frac{10!}{x!(10-x)!} \cdot (0,1)^x \cdot (0,9)^{n-x}$$

Jadi, diperoleh formula rumus distribusi probabilitas (peluang) X adalah

$$P(X) = \frac{10!}{x!(10-x)!} \cdot (0,1)^x \cdot (0,9)^{n-x}$$

b) Diket :

10 karyawan

Dipilih 1 orang

Tanya :

P terambilnya nomor dengan nilai kurang dari 4?

Solusi :

$$p = \frac{1}{10} = 0,1 \rightarrow q = 0,9$$

$$P(x < q)$$

$$x = 1,2,3$$

$$\text{untuk } x = 1$$

$$P(1) = \frac{10!}{(10-1)! 1!} (0,1)^1 (0,9)^{10-1}$$

$$P(1) = \frac{10!}{9! 1!} (0,1)^1 (0,9)^9$$

$$P(1) = (10)(0,1)(0,3874)$$

$$P(1) = 0,3874$$

untuk $x = 2$

$$P(2) = \frac{10!}{(10 - 2)! 2!} (0,1)^2 (0,9)^{10-2}$$

$$P(2) = \frac{10!}{8! 2!} (0,1)^1 (0,9)^8$$

$$P(2) = (45)(0,01)(0,4304)$$

$$P(2) = 0,1937$$

untuk $x = 3$

$$P(3) = \frac{10!}{(10 - 3)! 3!} (0,1)^3 (0,9)^{10-3}$$

$$P(3) = \frac{10!}{7! 3!} (0,1)^3 (0,9)^7$$

$$P(3) = (120)(0,001)(0,4782)$$

$$P(3) = 0,0573$$

Hitung distribusi peluang kumulatif :

$$P = \sum P(X)$$

$$P = P(1) + P(2) + P(3)$$

$$P = 0,3874 + 0,1937 + 0,0573$$

$$P = 0,6385$$

Jadi, Peluang terambilnya bilangan kurang dari 4 adalah 0,6385

c) Rata – rata ($n = 10$; $p = 0,1$)

$$\mu = \frac{1}{n} \sum_{i=1}^n X_i$$

$$\mu = n \times p$$

$$\mu = 10 \times 0,1$$

$$\mu = 1$$

- Varians ($n = 10$; $p = 0,1$; $q = 0,9$)

$$\sigma^2 = \sum_{i=1}^n (x_i - \bar{x})^2$$

$$\sigma^2 = n \times p \times q$$

$$\sigma^2 = 10 \times 0,1 \times 0,9$$

$$\sigma^2 = 0,9$$

Jadi, diperoleh nilai rata – rata sebesar 1 dan nilai varians sebesar 0,9

2. $x=1,2,3$

untuk $x=1$

$$P(1) = \frac{10!}{(10-1)!1!} [(0,1)]^1 [(0,9)]^{(10-1)}$$

$$P(1) = \frac{10!}{9!1!} [(0,1)]^1 [(0,9)]^9$$

$$P(1) = (10)(0,1)(0,3874)$$

$$P(1) = 0,3874$$

untuk $x=2$

$$P(2) = \frac{10!}{(10-2)!2!} [(0,1)]^2 [(0,9)]^{(10-2)}$$

$$P(2) = \frac{10!}{8!2!} [(0,1)]^2 [(0,9)]^8$$

$$P(2) = (45)(0,01)(0,4304)$$

$$P(2) = 0,1937$$

untuk $x=3$

$$P(3) = \frac{10!}{(10-3)!3!} [(0,1)]^3 [(0,9)]^{(10-3)}$$

$$P(3) = \frac{10!}{7!3!} [(0,1)]^3 [(0,9)]^7$$

$$P(3) = (120)(0,001)(0,4782)$$

$$P(3) = 0,0573$$

Hitung distribusi peluang kumulatif :

$$p = \sum [P(X)]$$

$$P = P(1) + P(2) + P(3)$$

$$P = 0,3874 + 0,1937 + 0,0573$$

$$P = 0,6384$$

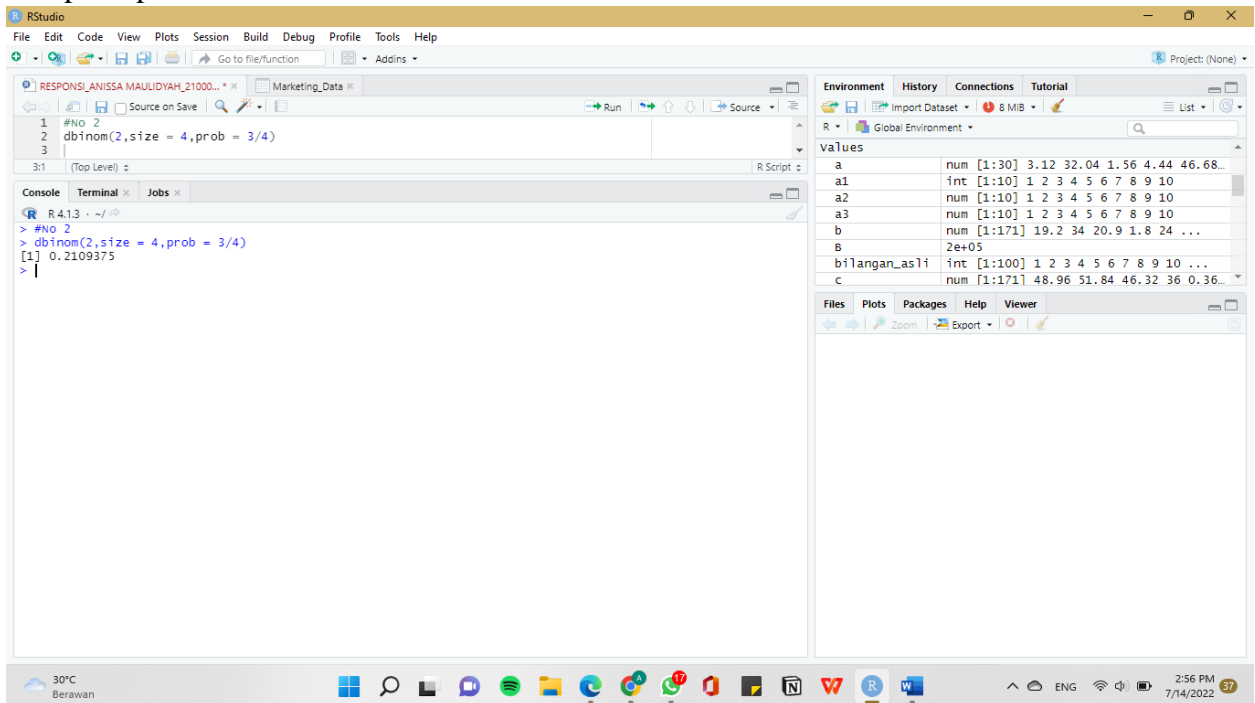
Syntax/Kode bebas :

```
dbinom(2,size = 4,prob = 3/4)
```

Hasil run :

```
dbinom(2,size = 4,prob = 3/4)
[1] 0.2109375
```

Tampilan pada R studio :



3. Syntax/Kode bebas :

```
Marketing_Data #Import Data
data = Marketing_Data
```

```
sum(is.na(data)) #Cek Data Kosong
```

```
class(data) #Tipe Data
```

```
#Mendefinisikan setiap kolom
```

```
youtube = data$youtube
```

```
facebook = data$facebook
```

```
newspaper = data$newspaper
```

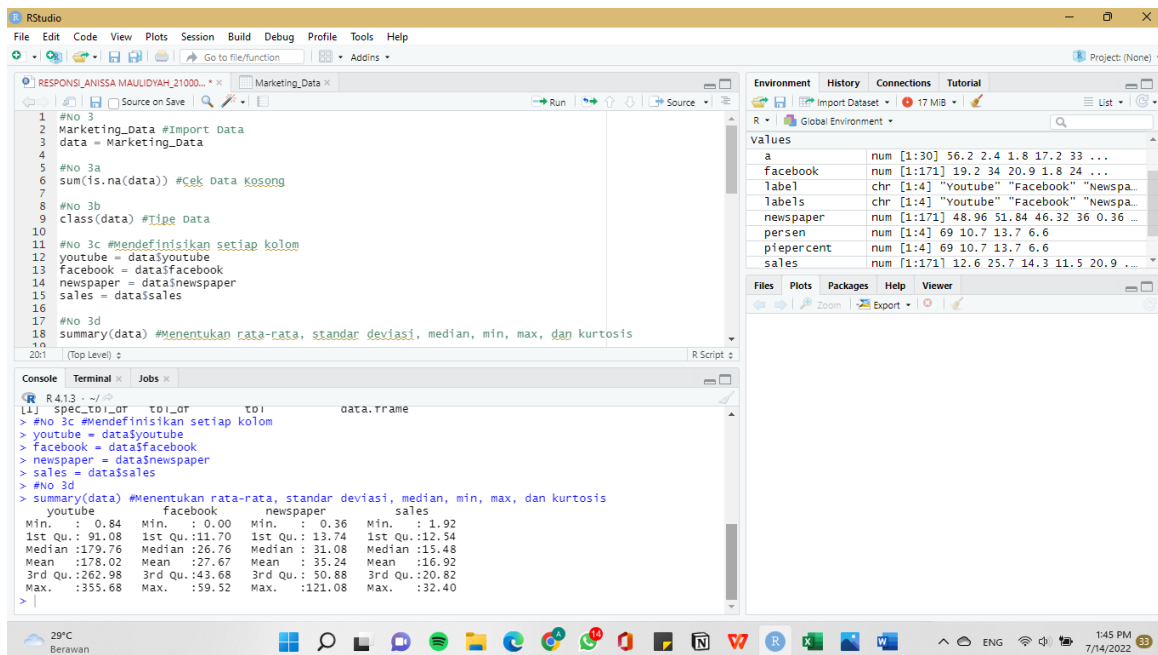
```
sales = data$sales
```

```
summary(data) #Menentukan rata-rata, standar deviasi, median,
min, max, dan kurtosis
```

Hasil run :

```
> Marketing_Data #Import Data
# A tibble: 171 x 4
  youtube facebook newspaper sales
  <dbl>     <dbl>     <dbl> <dbl>
1    84.7    19.2     49.0  12.6
2   351.    34.0     51.8  25.7
3   135.    20.9     46.3  14.3
4   117.     1.8     36    11.5
5   319.    24      0.36  20.9
6   115.    1.68     8.88  11.4
7   349.    4.92    10.2  15.4
8   320.    52.6     6    30.5
9    89.6   59.3    54.8  17.6
10   51.7   32.0    42.1  12.1
# ... with 161 more rows
> data = Marketing_Data
> sum(is.na(data)) #Cek Data Kosong
[1] 0
> class(data) #Tipe Data
[1] "spec_tbl_df" "tbl_df"      "tbl"        "data.frame"
> #Mendefinisikan setiap kolom
> youtube = data$youtube
> facebook = data$facebook
> newspaper = data$newspaper
> sales = data$sales
> summary(data) #Menentukan rata-rata, standar deviasi, median,
min, max, dan kurtosis
      youtube      facebook      newspaper      sales
Min.   : 0.84   Min.   : 0.00   Min.   : 0.36   Min.   :
1.92
1st Qu.: 91.08   1st Qu.:11.70   1st Qu.: 13.74   1st
Qu.:12.54
Median :179.76   Median :26.76   Median : 31.08
Median :15.48
Mean    :178.02   Mean    :27.67   Mean    : 35.24
Mean    :16.92
3rd Qu.:262.98   3rd Qu.:43.68   3rd Qu.: 50.88   3rd
Qu.:20.82
Max.    :355.68   Max.    :59.52   Max.    :121.08
Max.    :32.40
```

Tampilan pada R Studio :



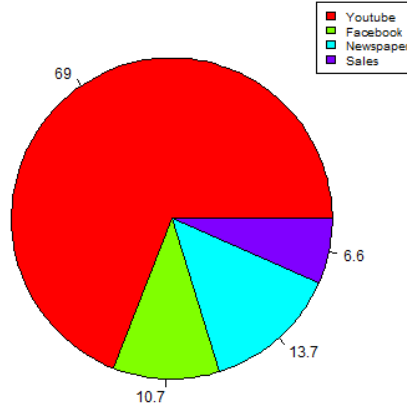
4. Syntax/Kode bebas :

```
x <- c(30441.6, 4731.84, 6026.04, 2893.8)
labels <- c("Youtube", "Facebook", "Newspaper", "Sales")
piepercent<- round(100*x/sum(x), 1)
png(file = "Diagram_Lingkaran_Pemaasaran.jpg")
pie(x, labels = piepercent, main = "Diagram Lingkaran
Pemasaran",col = rainbow(length(x)))
legend("topright", c("Youtube","Facebook","Newspaper","Sales"),
      cex = 0.8,
      fill = rainbow(length(x)))
dev.off()
```

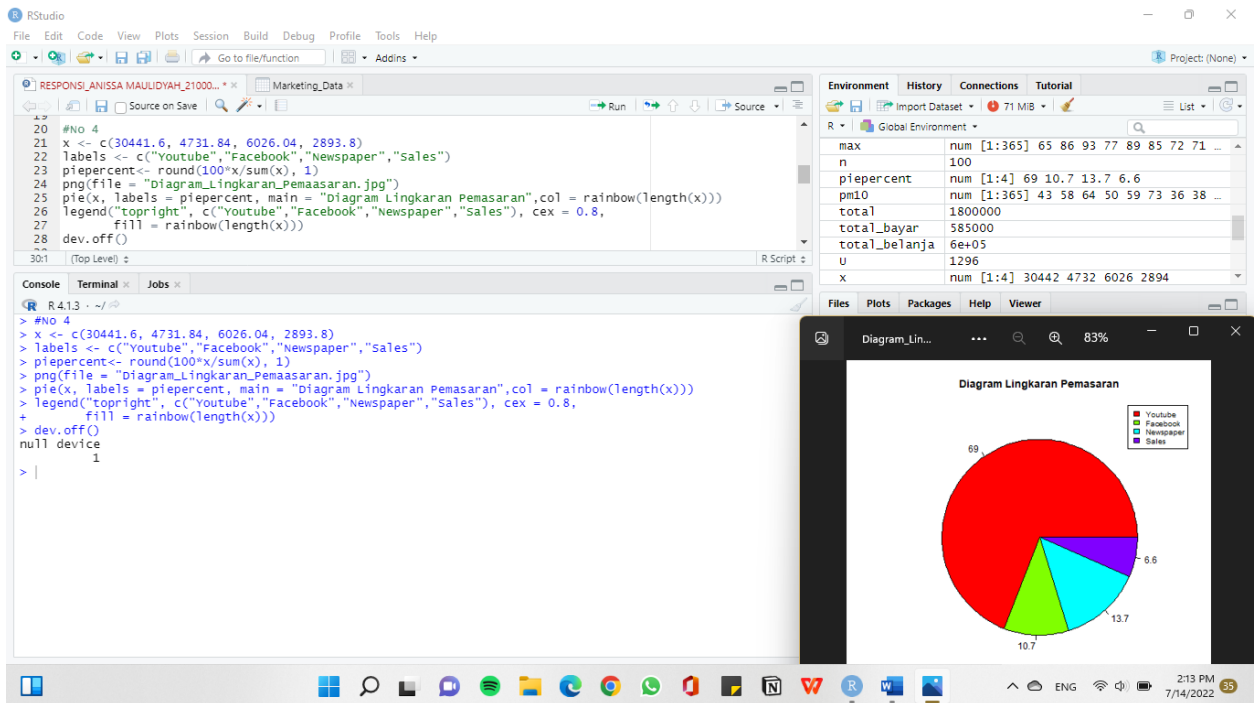
Hasil run :

```
> x <- c(30441.6, 4731.84, 6026.04, 2893.8)
> labels <- c("Youtube","Facebook","Newspaper","Sales")
> piepercent<- round(100*x/sum(x), 1)
> png(file = "Diagram_Lingkaran_Pemaasaran.jpg")
> pie(x, labels = piepercent, main = "Diagram Lingkaran
Pemasaran",col = rainbow(length(x)))
> legend("topright",
      c("Youtube","Facebook","Newspaper","Sales"), cex = 0.8,
+      fill = rainbow(length(x)))
> dev.off()
null device
1
```

Diagram Lingkaran Pemasaran



Tampilan pada R Studio :



5. Syntax/Kode bebas :

```
a <- data$youtube
b <- data$facebook
c <- data$newspaper
d <- data$sales
```

```

sample(a,size=1)
sample(b,size=1)
sample(c,size=1)
sample(d,size=1)

t.test(data$youtube, alternative = 'greater', mu = 313.56,
conf.level = 0.95)
t.test(data$facebook, alternative = 'less', mu = 50.76,
conf.level = 0.95)
t.test(data$newspaper, alternative = 'greater', mu = 27.84,
conf.level = 0.95)
t.test(data$sales, alternative = 'less', mu = 27.12,
conf.level = 0.95)

```

Hasil run :

```

> a <- data$youtube
> b <- data$facebook
> c <- data$newspaper
> d <- data$sales
> sample(a,size=1)
[1] 313.56
> sample(b,size=1)
[1] 50.76
> sample(c,size=1)
[1] 27.84
> sample(d,size=1)
[1] 27.12
> t.test(data$youtube, alternative = 'greater', mu = 313.56,
conf.level = 0.95)

```

One Sample t-test

```

data: data$youtube
t = -17.3, df = 170, p-value = 1
alternative hypothesis: true mean is greater than 313.56
95 percent confidence interval:
 165.0638      Inf
sample estimates:
mean of x
 178.0211

> t.test(data$facebook, alternative = 'less', mu = 50.76,
conf.level = 0.95)

```


One Sample t-test

```
data: data$facebook
t = -16.854, df = 170, p-value < 2.2e-16
alternative hypothesis: true mean is less than 50.76
95 percent confidence interval:
    -Inf 29.93718
sample estimates:
mean of x
 27.67158

> t.test(data$newspaper, alternative = 'greater', mu = 27.84,
conf.level = 0.95)
```

One Sample t-test

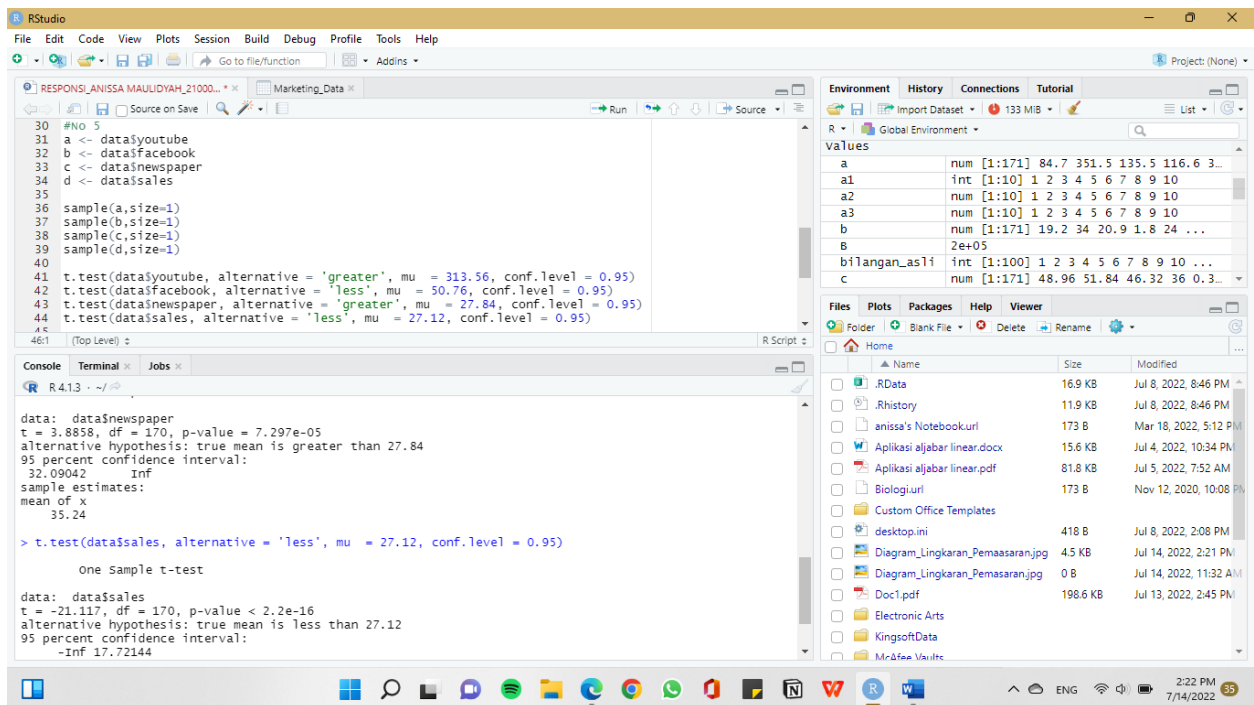
```
data: data$newspaper
t = 3.8858, df = 170, p-value = 7.297e-05
alternative hypothesis: true mean is greater than 27.84
95 percent confidence interval:
 32.09042      Inf
sample estimates:
mean of x
 35.24

> t.test(data$sales, alternative = 'less', mu = 27.12,
conf.level = 0.95)
```

One Sample t-test

```
data: data$sales
t = -21.117, df = 170, p-value < 2.2e-16
alternative hypothesis: true mean is less than 27.12
95 percent confidence interval:
    -Inf 17.72144
sample estimates:
mean of x
 16.92281
```

Tampilan pada R Studio :



6. Syntax/Kode bebas :

```
t.test(data$facebook, data$newspaper, var.equal=TRUE,
paired=FALSE)
```

Hasil run :

```
t.test(data$facebook, data$newspaper, var.equal=TRUE,
paired=FALSE)
```

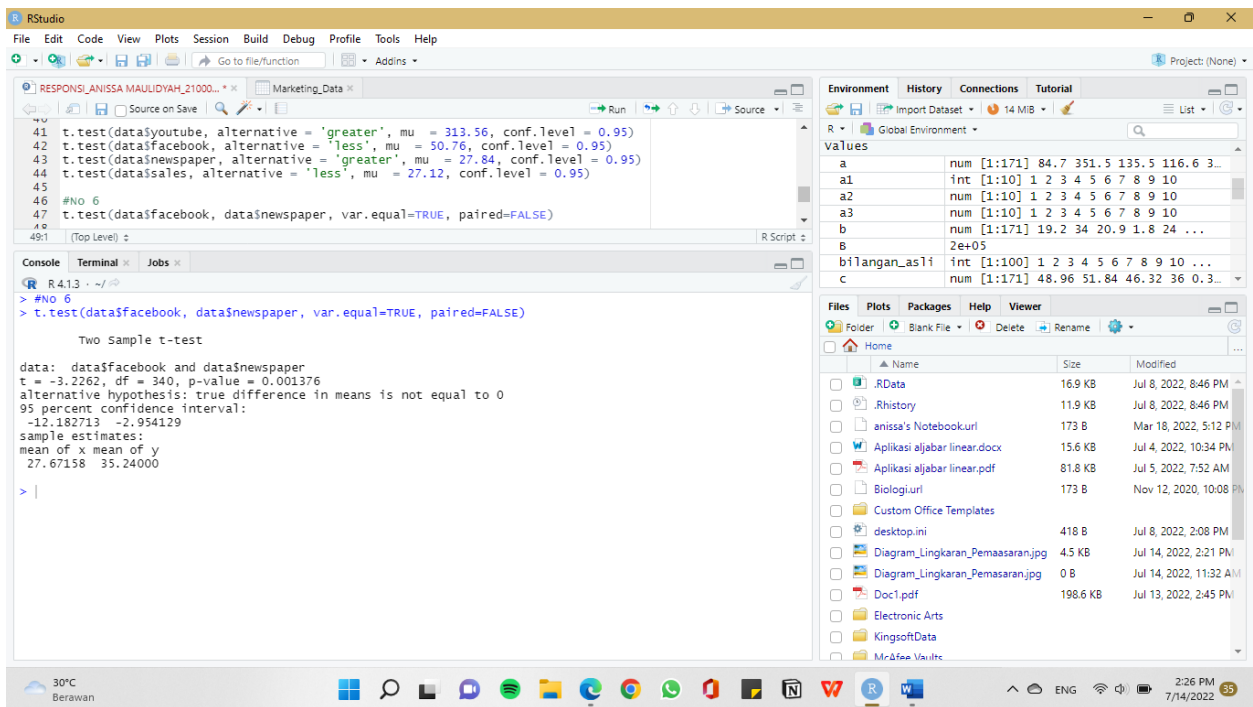
Two Sample t-test

```

data: data$facebook and data$newspaper
t = -3.2262, df = 340, p-value = 0.001376
alternative hypothesis: true difference in means is not equal
to 0
95 percent confidence interval:
 -12.182713 -2.954129
sample estimates:
mean of x mean of y
 27.67158  35.24000

```

Tampilan pada R Studio :



7. Syntax/Kode bebas :

```

facebook <- data$facebook
a = sample(facebook, size=30)
ks.test(a, 'pnorm', mean(a), sd(a))

```

Hasil run :

```

facebook <- data$facebook
> a = sample(facebook, size=30)
> ks.test(a, 'pnorm', mean(a), sd(a))

```

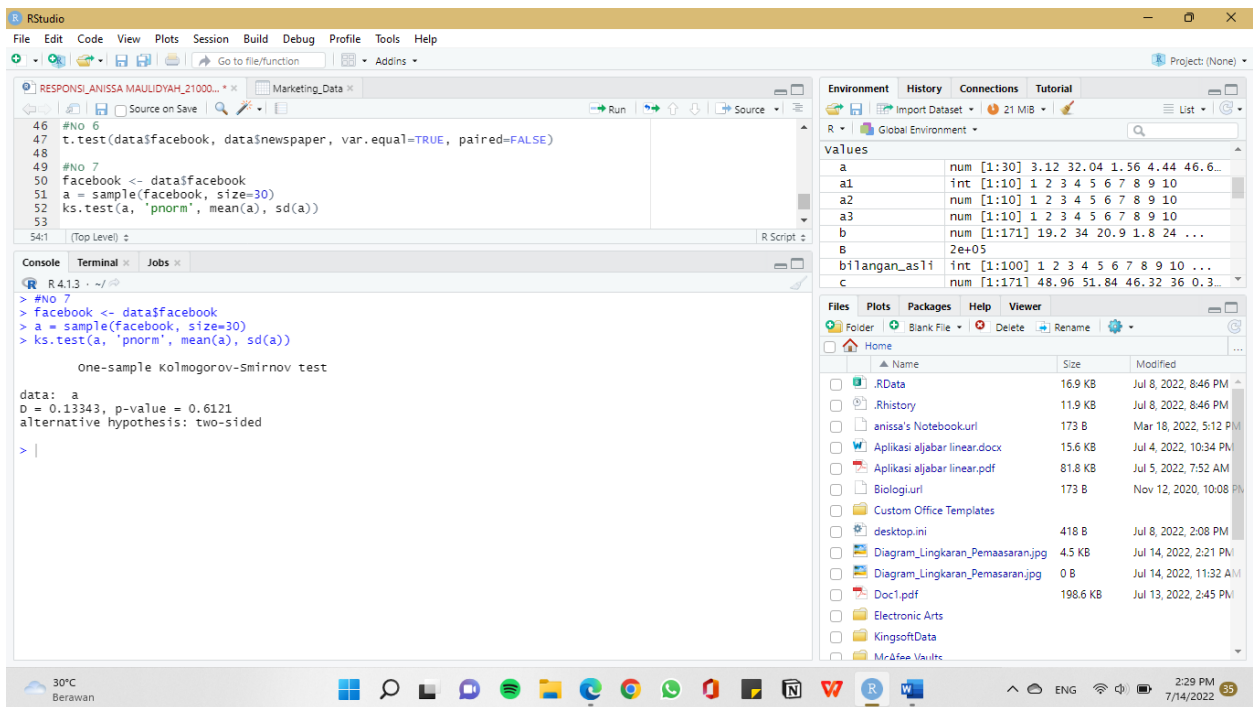
One-sample Kolmogorov-Smirnov test

```

data: a
D = 0.13343, p-value = 0.6121
alternative hypothesis: two-sided

```

Tampilan pada R Studio :



8. Syntax/Kode bebas :

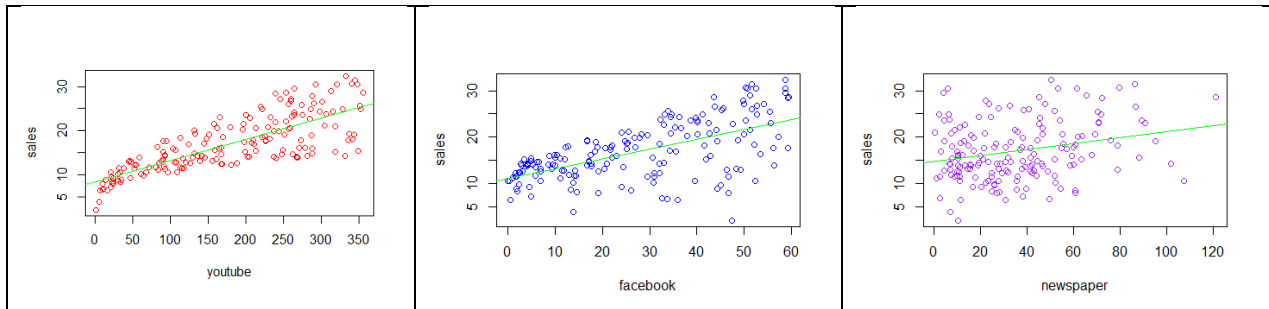
```
plot(youtube,sales,col = "red")
abline(lm(sales~youtube),col = "green")
```

```
plot(facebook,sales,col = "blue")
abline(lm(sales~facebook),col = "green")
```

```
plot(newspaper,sales,col = "purple")
abline(lm(sales~newspaper),col = "green")
```

Hasil run :

```
> plot(youtube,sales,col = "red")
> abline(lm(sales~youtube),col = "green")
> plot(facebook,sales,col = "blue")
> abline(lm(sales~facebook),col = "green")
> plot(newspaper,sales,col = "purple")
> abline(lm(sales~newspaper),col = "green")
```



Tampilan pada R Studio :

