Lampiran 1: Tabel Data Pengamatan Tinggi Gelombang Laut

1. Data Pengamatan 25 Juni 1999

No	Tinggi gelombang	No	Tinggi gelombang
1	0,355	25	0,280
2	0,355	26	0,280
3	0,350	27	0,280
4	0,320	28	0,280
5	0,315	29	0,280
6	0,312	30	0,275
7	0,310	31	0,270
8	0,310	32	0,270
9	0,310	33	0,270
10	0,300	34	0,255
11	0,300	35	0,255
12	0,300	36	0,255
13	0,300	37	0,255
14	0,300	38	0,250
15	0,300	39	0,250
16	0,300	40	0,245
17	0,300	41	0,240
18	0,300	42	0,240
19	0,290	43	0,240
20	0,290	44	0,240
21	0,285	45	0,240
22	0,280	46	0,230
23	0,280	47	0,230
24	0,280	48	0,200

Tabel 1.1. Data tinggi gelombang tanggal 25 Juni 1999

Sumber : Sutimin, Mustafid, Slamet Hargono, Kartono : Investigation of periodic wave patterns in shallow water. Laporan penelitian DCRGP tahun 2000.

2. Data Pengamatan 25 Oktober 2000

No	Tinggi gelombang	No	Tinggi gelombang
1	0,60	14	0,25
2	0,55	15	0,25
3	0,50	16	0,20
4	0,50	17	0,20
5	0,50	18	0,20
6	0,40	19	0,20
7	0,40	20	0,20
8	0,35	21	0,20
9	0,30	22	0,20
10	0,30	23	0,15
11	0,30	24	0,15
12	0,25	25	0,15
13	0,25	26	0,15

Tabel 1.2.Data tinggi gelombang tanggal 25 Oktober 2000

Sumber : Sutimin, Mustafid, Slamet Hargono, Kartono : Investigation of periodic wave patterns in shallow water. Laporan penelitian DCRGP tahun 2000.

Lampiran 2 : Perhitungan Estimasi Parameter Menggunakan Program Maple V.

```
> DISTRIBUSI_WEIBULL_3_BULAN_JUNI;
```

DISTRIBUSI_WEIBULL_3_BULAN_JUNI

```
> restart;
> x:=
  [0.24,0.24,0.24,0.24,0.24,0.245,0.250,0.250,0.255,0.255,0.255,0.
  255,0.270,0.270,0.270,0.275,0.300,0.300,0.300,0.300,0.300,0.300,
  0.300,0.300,0.300,0.312,0.320,0.350,0.355,0.355,0.280,0.280,0.28
  0,0.280,0.280,0.280,0.280,0.280,0.285,0.290,0.290,0.310,0.310,0.
  310,0.315,0.230,0.230,0.200];
```

$x := [.24, .24, .24, .24, .24, .245, .250, .250, .255, .255, .255, .255, .270, .270, .270, .275, .300, .300, .300, .300, .300, .300, .300, .300, .312, .320, .350, .355, .355, .280, .280, .280, .280, .280, .280, .280, .280, .285, .290, .290, .310, .310, .310, .315, .230, .230, .200]$

```
> n:=48;
```

$$n := 48$$

```
> c:=4;
```

$$c := 4$$

```
> eq1:=a=((n^(-1))*(sum((x[i]-b)^(c),i=1..n)))^(1/c);
```

$$eq1 := a = \left(\frac{1}{48}(.312-b)^4+\frac{1}{48}(.320-b)^4+\frac{1}{48}(.350-b)^4+\frac{1}{24}(.355-b)^4+\frac{1}{6}(.280-b)^4 + \frac{1}{48}(.285-b)^4+\frac{1}{24}(.290-b)^4+\frac{1}{16}(.310-b)^4+\frac{1}{48}(.315-b)^4+\frac{1}{24}(.230-b)^4 + \frac{1}{48}(.200-b)^4+\frac{1}{48}(.245-b)^4+\frac{1}{12}(.255-b)^4+\frac{1}{16}(.270-b)^4+\frac{1}{48}(.275-b)^4 + \frac{3}{16}(.300-b)^4+\frac{1}{24}(.250-b)^4+\frac{5}{48}(.24-b)^4\right)^{1/4}$$

```
> eq2:=(c-1)*sum((x[i]-b)^(-1),i=1..n)=c*(a^(-c))*sum((x[i]-b)^(c-
  1),i=1..n);
```

$$eq2 := \frac{3}{.285-b}+\frac{6}{.290-b}+\frac{9}{.310-b}+\frac{3}{.315-b}+\frac{6}{.230-b}+\frac{3}{.200-b}+\frac{3}{.275-b} + \frac{3}{.245-b}+\frac{6}{.250-b}+\frac{12}{.255-b}+\frac{9}{.270-b}+\frac{27}{.300-b}+\frac{3}{.312-b}+\frac{3}{.320-b}+\frac{3}{.350-b} + \frac{6}{.355-b}+\frac{24}{.280-b}+\frac{15}{.24-b} = 4\left((.285-b)^3+2(.290-b)^3+3(.310-b)^3 + 8(.280-b)^3+(.275-b)^3+9(.300-b)^3+(.312-b)^3+(.320-b)^3+(.350-b)^3 + 2(.355-b)^3+5(.24-b)^3+(.245-b)^3+2(.250-b)^3+4(.255-b)^3+3(.270-b)^3 + 2(.230-b)^3+(.200-b)^3+(.315-b)^3\right) / a^4$$

```
> solve({eq1,eq2},{a,b});
```

$\{a = .1300075714, b = .1627129080\}$

```
> DISTRIBUSI_WEIBUL_2_BULAN_JUNI;
```

DISTRIBUSI_WEIBUL_2_BULAN_JUNI

```
> restart;
> x:=
  [0.355,0.355,0.350,0.320,0.315,0.312,0.310,0.310,0.310,0.300,0.3
  00,0.300,0.300,0.300,0.300,0.300,0.300,0.300,0.290,0.290,0.285,0
  .280,0.280,0.280,0.280,0.280,0.280,0.280,0.280,0.275,0.270,0.270
  ,0.270,0.255,0.255,0.255,0.255,0.250,0.250,0.245,0.240,0.240,0.2
  40,0.240,0.240,0.230,0.230,0.200];
```

$$x := [.355, .355, .350, .320, .315, .312, .310, .310, .310, .300, .300, .300, .300, .300, .300, .300, .300, .300, .290, .290, .285, .280, .280, .280, .280, .280, .280, .280, .280, .275, .270, .270, .270, .255, .255, .255, .255, .250, .250, .245, .240, .240, .240, .240, .240, .230, .230, .200]$$

```
> n:=48;
```

$$n := 48$$

```
> eq1:=a=(((n^(-1))*(sum((x[i])^(8.96320),i=1..n)))^(1/8.96320));
```

$$eq1 := a = .2949450289$$

```
> restart;
> x:=
  [0.355,0.355,0.350,0.320,0.315,0.312,0.310,0.310,0.310,0.300,0.3
  00,0.300,0.300,0.300,0.300,0.300,0.300,0.300,0.290,0.290,0.285,0
  .280,0.280,0.280,0.280,0.280,0.280,0.280,0.280,0.275,0.270,0.270
  ,0.270,0.255,0.255,0.255,0.255,0.250,0.250,0.245,0.240,0.240,0.2
  40,0.240,0.240,0.230,0.230,0.200];
```

$$x := [.355, .355, .350, .320, .315, .312, .310, .310, .310, .300, .300, .300, .300, .300, .300, .300, .300, .300, .290, .290, .285, .280, .280, .280, .280, .280, .280, .280, .280, .275, .270, .270, .270, .255, .255, .255, .255, .250, .250, .245, .240, .240, .240, .240, .240, .230, .230, .200]$$

```
> n:=48;
```

$$n := 48$$

```
> eq2:=c=(((sum((x[i])^(c))*ln(x[i]),i=1..n))*(sum((x[i])^(c),i=1
  ..n))^(-1))-((n^(-1))*sum(ln(x[i]),i=1..n)))^(-1);
```

$$eq2 := c = 1 / ((-1.049822124 .350^c - 2.071274980 .355^c - 1.155182640 .315^c - 1.139434283 .320^c - 10.83575524 .300^c - 3.513548946 .310^c - 1.164752091 .312^c - 10.18372541 .280^c - 1.255266099 .285^c - 2.475748712 .290^c - 5.465966936 .255^c - 3.927999960 .270^c - 1.290984181 .275^c - 7.135581780 .240^c - 1.406497068 .245^c - 2.772588722 .250^c - 1.609437912 .200^c - 2.939351940 .230^c) / (.350^c + 2 .355^c + .315^c + .320^c + 9 .300^c + 3 .310^c + .312^c + 8 .280^c + .285^c + 2 .290^c + 4 .255^c + 3 .270^c + .275^c + 5 .240^c + .245^c + 2 .250^c + .200^c + 2 .230^c) + 1.279019146)$$

```
> fsolve({eq2},{c});
```

$$\{c = 8.963199765\}$$

```
>
```

```
> DISTRIBUSI_FISHER_1_BULAN_JUNI;
```

DISTRIBUSI_FISHER_1_BULAN_JUNI

```
> restart;
> x:=
  [0.24,0.24,0.24,0.24,0.24,0.245,0.250,0.250,0.255,0.255,0.255,0.
  255,0.270,0.270,0.270,0.275,0.300,0.300,0.300,0.300,0.300,0.300,
  0.300,0.300,0.300,0.312,0.320,0.350,0.355,0.355,0.280,0.280,0.28
  0,0.280,0.280,0.280,0.280,0.280,0.285,0.290,0.290,0.310,0.310,0.
  310,0.315,0.230,0.230,0.200];
```

$$x := [.24, .24, .24, .24, .24, .245, .250, .250, .255, .255, .255, .255, .270, .270, .270, .275, .300, .300, .300, .300, .300, .300, .300, .300, .300, .312, .320, .350, .355, .355, .280, .280, .280, .280, .280, .280, .280, .280, .285, .290, .290, .310, .310, .310, .315, .230, .230, .200]$$

```
> n:=48;
```

$$n := 48$$

```
> eq1:=b=-(a)*ln(((1/n)*(sum(exp(-x[i]/a),i=1..n))));
```

$$eq1 := b = -a \ln\left(\frac{1}{48}e^{\left(-\frac{.312}{a}\right)} + \frac{1}{48}e^{\left(-\frac{.320}{a}\right)} + \frac{1}{48}e^{\left(-\frac{.350}{a}\right)} + \frac{1}{24}e^{\left(-\frac{.355}{a}\right)} + \frac{1}{6}e^{\left(-\frac{.280}{a}\right)} + \frac{1}{48}e^{\left(-\frac{.285}{a}\right)} + \frac{1}{24}e^{\left(-\frac{.290}{a}\right)} + \frac{1}{16}e^{\left(-\frac{.310}{a}\right)} + \frac{1}{48}e^{\left(-\frac{.315}{a}\right)} + \frac{1}{24}e^{\left(-\frac{.230}{a}\right)} + \frac{1}{48}e^{\left(-\frac{.200}{a}\right)} + \frac{5}{48}e^{\left(-\frac{.24}{a}\right)} + \frac{1}{48}e^{\left(-\frac{.245}{a}\right)} + \frac{1}{24}e^{\left(-\frac{.250}{a}\right)} + \frac{1}{12}e^{\left(-\frac{.255}{a}\right)} + \frac{1}{16}e^{\left(-\frac{.270}{a}\right)} + \frac{1}{48}e^{\left(-\frac{.275}{a}\right)} + \frac{3}{16}e^{\left(-\frac{.300}{a}\right)}\right)$$

```
> eq2:=a=((1/n)*(sum(x[i],i=1..n)))-((sum(x[i]*exp(-(x[i]/a)),i=1.
  .n))*(sum(exp(-(x[i]/a)),i=1..n))^(-1));
```

$$eq2 := a = .2802500000 - \left(.312\,e^{\left(-\frac{.312}{a}\right)} + .320\,e^{\left(-\frac{.320}{a}\right)} + .350\,e^{\left(-\frac{.350}{a}\right)} + .710\,e^{\left(-\frac{.355}{a}\right)} + 2.240\,e^{\left(-\frac{.280}{a}\right)} + .285\,e^{\left(-\frac{.285}{a}\right)} + .580\,e^{\left(-\frac{.290}{a}\right)} + .930\,e^{\left(-\frac{.310}{a}\right)} + .315\,e^{\left(-\frac{.315}{a}\right)} + .460\,e^{\left(-\frac{.230}{a}\right)} + .200\,e^{\left(-\frac{.200}{a}\right)} + 1.20\,e^{\left(-\frac{.24}{a}\right)} + .245\,e^{\left(-\frac{.245}{a}\right)} + .500\,e^{\left(-\frac{.250}{a}\right)} + 1.020\,e^{\left(-\frac{.255}{a}\right)} + .810\,e^{\left(-\frac{.270}{a}\right)} + .275\,e^{\left(-\frac{.275}{a}\right)} + 2.700\,e^{\left(-\frac{.300}{a}\right)}\right) \Big/ \left(e^{\left(-\frac{.312}{a}\right)} + e^{\left(-\frac{.320}{a}\right)} + e^{\left(-\frac{.350}{a}\right)} + 2\,e^{\left(-\frac{.355}{a}\right)} + 8\,e^{\left(-\frac{.280}{a}\right)} + e^{\left(-\frac{.285}{a}\right)} + 2\,e^{\left(-\frac{.290}{a}\right)} + 3\,e^{\left(-\frac{.310}{a}\right)} + e^{\left(-\frac{.315}{a}\right)} + 2\,e^{\left(-\frac{.230}{a}\right)} + e^{\left(-\frac{.200}{a}\right)} + 5\,e^{\left(-\frac{.24}{a}\right)} + e^{\left(-\frac{.245}{a}\right)} + 2\,e^{\left(-\frac{.250}{a}\right)} + 4\,e^{\left(-\frac{.255}{a}\right)} + 3\,e^{\left(-\frac{.270}{a}\right)} + e^{\left(-\frac{.275}{a}\right)} + 9\,e^{\left(-\frac{.300}{a}\right)}\right)$$

```
> solve({eq1,eq2},{a,b});
```

$$\{b = .2639786578, a = .03173838951\}$$

```
> DISTRIBUSI_FISHER_3_BULAN_JUNI;
```

DISTRIBUSI_FISHER_3_BULAN_JUNI

```
> restart;
> x:=
  [0.24,0.24,0.24,0.24,0.24,0.245,0.250,0.250,0.255,0.255,0.255,0.
  255,0.270,0.270,0.270,0.275,0.300,0.300,0.300,0.300,0.300,0.300,
  0.300,0.300,0.300,0.312,0.320,0.350,0.355,0.355,0.280,0.280,0.28
  0,0.280,0.280,0.280,0.280,0.280,0.285,0.290,0.290,0.310,0.310,0.
  310,0.315,0.230,0.230,0.200];
```

$$x := [.24, .24, .24, .24, .24, .245, .250, .250, .255, .255, .255, .255, .270, .270, .270, .275, .300, .300, .300, .300, .300, .300, .300, .300, .312, .320, .350, .355, .355, .280, .280, .280, .280, .280, .280, .280, .280, .285, .290, .290, .310, .310, .310, .315, .230, .230, .200]$$

```
> n:=48;
```

$$n := 48$$

```
> c:=4;
```

$$c := 4$$

```
> eq1:=a=((n^(-1))*(sum((b-x[i])^(c),i=1..n)))^(1/c);
```

$$eq1 := a = \left(\frac{5}{48}(b-.24)^4 + \frac{1}{48}(b-.245)^4 + \frac{1}{24}(b-.250)^4 + \frac{1}{12}(b-.255)^4 + \frac{1}{16}(b-.270)^4 + \frac{1}{48}(b-.275)^4 + \frac{3}{16}(b-.300)^4 + \frac{1}{48}(b-.312)^4 + \frac{1}{48}(b-.320)^4 + \frac{1}{48}(b-.350)^4 + \frac{1}{24}(b-.355)^4 + \frac{1}{6}(b-.280)^4 + \frac{1}{48}(b-.285)^4 + \frac{1}{24}(b-.290)^4 + \frac{1}{16}(b-.310)^4 + \frac{1}{48}(b-.315)^4 + \frac{1}{24}(b-.230)^4 + \frac{1}{48}(b-.200)^4\right)^{1/4}$$

```
> eq2:=(c-1)*sum((b-x[i])^(-1),i=1..n)=c*(a^(-c))*sum((b-x[i])^(c-
  1),i=1..n);
```

$$eq2 := \frac{15}{b-.24} + \frac{3}{b-.245} + \frac{6}{b-.250} + \frac{12}{b-.255} + \frac{9}{b-.270} + \frac{3}{b-.275} + \frac{3}{b-.320} + \frac{27}{b-.300} + \frac{24}{b-.280} + \frac{3}{b-.285} + \frac{6}{b-.290} + \frac{9}{b-.310} + \frac{3}{b-.315} + \frac{6}{b-.230} + \frac{3}{b-.200} + \frac{3}{b-.312} + \frac{3}{b-.350} + \frac{6}{b-.355} = 4\,(5\,(b-.24)^3 + (b-.245)^3 + 2\,(b-.250)^3 + 4\,(b-.255)^3 + 3\,(b-.270)^3 + (b-.275)^3 + 9\,(b-.300)^3 + (b-.312)^3 + (b-.320)^3 + (b-.350)^3 + 2\,(b-.355)^3 + 8\,(b-.280)^3 + (b-.285)^3 + 2\,(b-.290)^3 + 3\,(b-.310)^3 + (b-.315)^3 + 2\,(b-.230)^3 + (b-.200)^3) \,/\, a^4$$

```
> solve({eq1,eq2},{a,b});
```

$$\{a = 0.12955, b = 0.39777\}$$

```
> DISTRIBUSI_WEIBUL_3_BULAN_OKTOBER;
```

DISTRIBUSI_WEIBUL_3_BULAN_OKTOBER

```
> restart;
> x:=[0.60,0.55,0.50,0.50,0.50,0.40,0.40,0.35,0.30,0.30,0.30,0.25,
  0.25,0.25,0.25,0.20,0.20,0.20,0.20,0.20,0.20,0.20,0.15,0.15,0.15
  ,0.15];
```

$$x := [.60, .55, .50, .50, .50, .40, .40, .35, .30, .30, .30, .25, .25, .25, .25, .20, .20, .20, .20, .20, .20, .20, .15, .15, .15, .15]$$

```
> n:=26;
```

$$n := 26$$

```
> c:=2;
```

$$c := 2$$

```
> eq1:=a=((n^(-1))*(sum((x[i]-b)^(c),i=1..n)))^(1/c);
```

$$eq1 := a = \left(\frac{1}{26}(.60-b)^2+\frac{1}{26}(.55-b)^2+\frac{3}{26}(.50-b)^2+\frac{1}{13}(.40-b)^2+\frac{1}{26}(.35-b)^2 + \frac{3}{26}(.30-b)^2+\frac{2}{13}(.25-b)^2+\frac{7}{26}(.20-b)^2+\frac{2}{13}(.15-b)^2\right)^{1/2}$$

```
> eq2:=(c-1)*sum((x[i]-b)^(-1),i=1..n)=c*(a^(-c))*sum((x[i]-b)^(c-
  1),i=1..n);
```

$$eq2 := \frac{4}{.15-b}+\frac{1}{.55-b}+\frac{3}{.50-b}+\frac{1}{.60-b}+\frac{4}{.25-b}+\frac{1}{.35-b}+\frac{3}{.30-b}+\frac{2}{.40-b}+\frac{7}{.20-b} = 2\frac{7.70-26\,b}{a^2}$$

```
> q3:=(((sum((x[i]-(b))^c*log(x[i]-(b)),i=1..n))*(sum((x[i]-(b))^c
  ,i=1..n))^(-1))-((n^(-1))*sum(log(x[i]-(b)),i=1..n)))^(-1);
```

$$q3 := 1/\Big(((.35-b)^2\ln(.35-b)+3\,(.30-b)^2\ln(.30-b)+4\,(.25-b)^2\ln(.25-b) + 2\,(.40-b)^2\ln(.40-b)+(.55-b)^2\ln(.55-b)+3\,(.50-b)^2\ln(.50-b) + (.60-b)^2\ln(.60-b)+4\,(.15-b)^2\ln(.15-b)+7\,(.20-b)^2\ln(.20-b))\,/\,((.60-b)^2 + (.55-b)^2+3\,(.50-b)^2+2\,(.40-b)^2+(.35-b)^2+3\,(.30-b)^2+4\,(.25-b)^2 + 7\,(.20-b)^2+4\,(.15-b)^2)-\frac{1}{26}\ln(.35-b)-\frac{3}{26}\ln(.30-b)-\frac{1}{26}\ln(.60-b) - \frac{1}{26}\ln(.55-b)-\frac{3}{26}\ln(.50-b)-\frac{1}{13}\ln(.40-b)-\frac{2}{13}\ln(.25-b)-\frac{7}{26}\ln(.20-b) - \frac{2}{13}\ln(.15-b)\Big)$$

```
> solve({eq1,eq2},{a,b});
>                    {b = .08018695206, a = .2539911845}
```

```
> DISTRIBUSI_WEIBUL_2_BULAN_OKTOBER;
```

$$DISTRIBUSI\_WEIBUL\_2\_BULAN\_OKTOBER$$

```
> restart;
> x:=[0.60,0.55,0.50,0.50,0.50,0.40,0.40,0.35,0.30,0.30,0.30,0.25,
  0.25,0.25,0.25,0.20,0.20,0.20,0.20,0.20,0.20,0.20,
  0.15,0.15,0.15,0.15];
```

$$x := [.60, .55, .50, .50, .50, .40, .40, .35, .30, .30, .30, .25, .25, .25, .25, .20, .20, .20, .20, .20, .20, .20, .15, .15, .15, .15]$$

```
> n:=26;
```

$$n := 26$$

```
> eq1:=a=(((n^(-1))*(sum((x[i])^(2.38287),i=1..n)))^(1/2.38287));
```

$$eq1 := a = .3358432712$$

```
> restart;
> x:=[0.60,0.55,0.50,0.50,0.50,0.40,0.40,0.35,0.30,0.30,0.30,0.25,
  0.25,0.25,0.25,0.20,0.20,0.20,0.20,0.20,0.20,0.20,
  0.15,0.15,0.15,0.15];
```

$$x := [.60, .55, .50, .50, .50, .40, .40, .35, .30, .30, .30, .25, .25, .25, .25, .20, .20, .20, .20, .20, .20, .20, .15, .15, .15, .15]$$

```
> n:=26;
```

$$n := 26$$

```
> eq2:=c=(((sum(((x[i])^(c))*ln(x[i]),i=1..n))*(sum((x[i])^(c),i=1
  ..n))^(-1))-((n^(-1))*sum(ln(x[i]),i=1..n)))^(-1);
```

$$eq2 := c = 1/((-7.588479940\,.15^c - 1.049822124\,.35^c - 3.611918412\,.30^c - 5.545177444\,.25^c - 11.26606538\,.20^c - 2.079441542\,.50^c - 1.832581464\,.40^c - .5108256238\,.60^c - .5978370008\,.55^c)/(4\,.15^c + .35^c + 3\,.30^c + 4\,.25^c + 7\,.20^c + 3\,.50^c + 2\,.40^c + .60^c + .55^c) + 1.310851882)$$

```
> fsolve({eq2},{c});
```

$$\{c = 2.382871307\}$$

```
>
```

```
> DISTRIBUSI_FISHER_1_BULAN_OKTOBER;
```

$$DISTRIBUSI\_FISHER\_1\_BULAN\_OKTOBER$$

```
> restart;
> x:=[0.60,0.55,0.50,0.50,0.50,0.40,0.40,0.35,0.30,0.30,0.30,0.25,
  0.25,0.25,0.25,0.20,0.20,0.20,0.20,0.20,0.20,0.20,
  0.15,0.15,0.15,0.15];
```

$$x := [.60, .55, .50, .50, .50, .40, .40, .35, .30, .30, .30, .25, .25, .25, .25, .20, .20, .20, .20, .20, .20, .20, .15, .15, .15, .15]$$

```
> n:=26;
```

$$n := 26$$

```
> eq1:=b=(-a)*ln(((1/n)*(sum(exp(-x[i]/a),i=1..n))));
```

$$eq1 := b = -a \ln\left(\frac{1}{26}e^{\left(-\frac{.60}{a}\right)} + \frac{1}{26}e^{\left(-\frac{.55}{a}\right)} + \frac{3}{26}e^{\left(-\frac{.50}{a}\right)} + \frac{3}{26}e^{\left(-\frac{.30}{a}\right)} + \frac{1}{26}e^{\left(-\frac{.35}{a}\right)} + \frac{1}{13}e^{\left(-\frac{.40}{a}\right)} + \frac{7}{26}e^{\left(-\frac{.20}{a}\right)} + \frac{2}{13}e^{\left(-\frac{.25}{a}\right)} + \frac{2}{13}e^{\left(-\frac{.15}{a}\right)}\right)$$

```
> eq2:=a=((1/n)*(sum(x[i],i=1..n)))-((sum(x[i]*exp(-(x[i]/a)),i=1.
  .n))*(sum(exp(-(x[i]/a)),i=1..n))^(-1));
```

$$eq2 := a = .2961538461 - \left(.60\,e^{\left(-\frac{.60}{a}\right)} + .55\,e^{\left(-\frac{.55}{a}\right)} + 1.50\,e^{\left(-\frac{.50}{a}\right)} + .90\,e^{\left(-\frac{.30}{a}\right)} + .35\,e^{\left(-\frac{.35}{a}\right)} + .80\,e^{\left(-\frac{.40}{a}\right)} + 1.40\,e^{\left(-\frac{.20}{a}\right)} + 1.00\,e^{\left(-\frac{.25}{a}\right)} + .60\,e^{\left(-\frac{.15}{a}\right)}\right) \Big/ \left(e^{\left(-\frac{.60}{a}\right)} + e^{\left(-\frac{.55}{a}\right)} + 3\,e^{\left(-\frac{.50}{a}\right)} + 3\,e^{\left(-\frac{.30}{a}\right)} + e^{\left(-\frac{.35}{a}\right)} + 2\,e^{\left(-\frac{.40}{a}\right)} + 7\,e^{\left(-\frac{.20}{a}\right)} + 4\,e^{\left(-\frac{.25}{a}\right)} + 4\,e^{\left(-\frac{.15}{a}\right)}\right)$$

```
> fsolve({eq1,eq2},{a,b});
```

$$\{b = .2360575187, a = .09514299401\}$$

```
>
```

```
> DISTRIBUSI_FISHER_3_BULAN_OKTOBER;
```

$$DISTRIBUSI\_FISHER\_3\_BULAN\_OKTOBER$$

```
> restart;
> x:=[0.60,0.55,0.50,0.50,0.50,0.40,0.40,0.35,0.30,0.30,0.30,0.25,
  0.25,0.25,0.25,0.20,0.20,0.20,0.20,0.20,0.20,0.20,
  0.15,0.15,0.15,0.15];
```

$$x := [.60, .55, .50, .50, .50, .40, .40, .35, .30, .30, .30, .25, .25, .25, .25, .20, .20, .20, .20, .20, .20, .20, .15, .15, .15, .15]$$

```
> n:=26;
```

$$n := 26$$

```
> c:=6;
```

$$c := 6$$

```
> eq1:=a=((n^(-1))*(sum((b-x[i])^(c),i=1..n)))^(1/c);
```

$$eq1 := a = \left(\frac{1}{26}(b-.35)^6 + \frac{3}{26}(b-.30)^6 + \frac{2}{13}(b-.25)^6 + \frac{7}{26}(b-.20)^6 + \frac{1}{26}(b-.60)^6 + \frac{1}{26}(b-.55)^6 + \frac{3}{26}(b-.50)^6 + \frac{1}{13}(b-.40)^6 + \frac{2}{13}(b-.15)^6\right)^{1/6}$$

```
> eq2:=(c-1)*sum((b-x[i])^(-1),i=1..n)=c*(a^(-c))*sum((b-x[i])^(c-
  1),i=1..n);
```

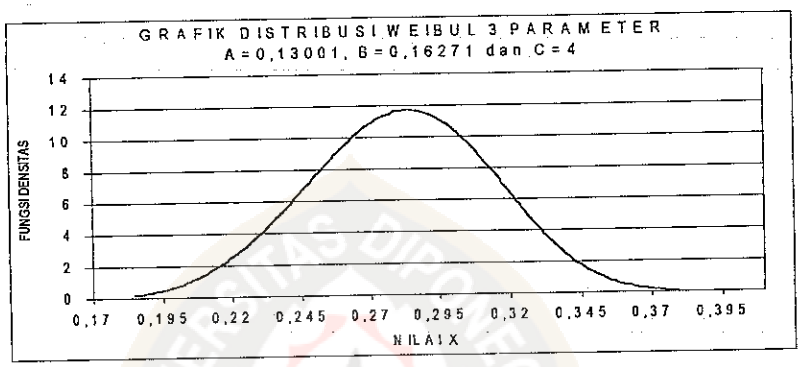
$$eq2 := \frac{20}{b-.15} + \frac{10}{b-.40} + \frac{5}{b-.35} + \frac{15}{b-.30} + \frac{20}{b-.25} + \frac{35}{b-.20} + \frac{5}{b-.60} + \frac{5}{b-.55} + \frac{15}{b-.50} = 6\,(\,(b-.60)^5 + (b-.55)^5 + 3\,(b-.50)^5 + 2\,(b-.40)^5 + (b-.35)^5 + 3\,(b-.30)^5 + 4\,(b-.25)^5 + 7\,(b-.20)^5 + 4\,(b-.15)^5) \,/\, a^6$$

```
> solve({eq1,eq2},{a,b});
```

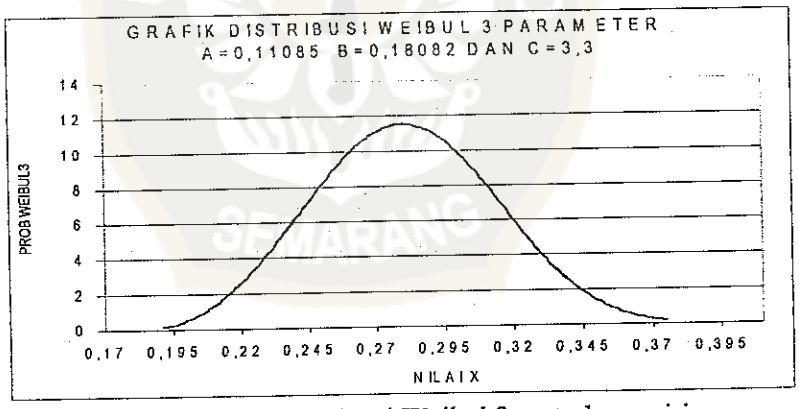
$$\{a = .6846631199, b = .9313174339\}$$

Lampiran 3 : Grafik Fungsi Densitas Distribusi Weibull 3, Weibull 2, Fisher 1dan Fisher 3

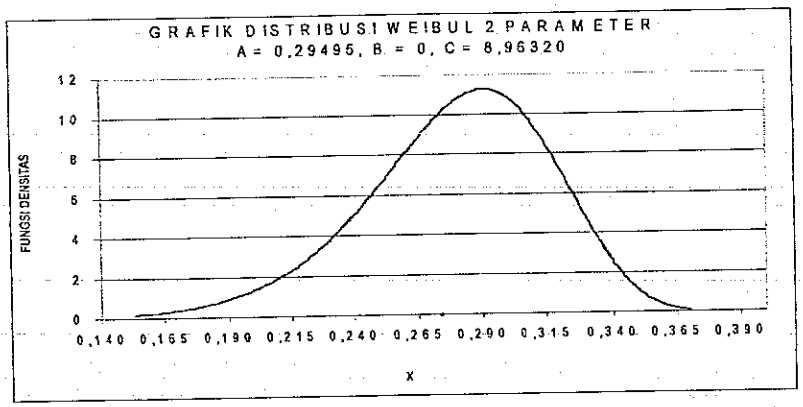
1 GRAFIK FUNGSI DENSITAS DATA PENGAMATAN TANGGAL 25 JUNI 1999



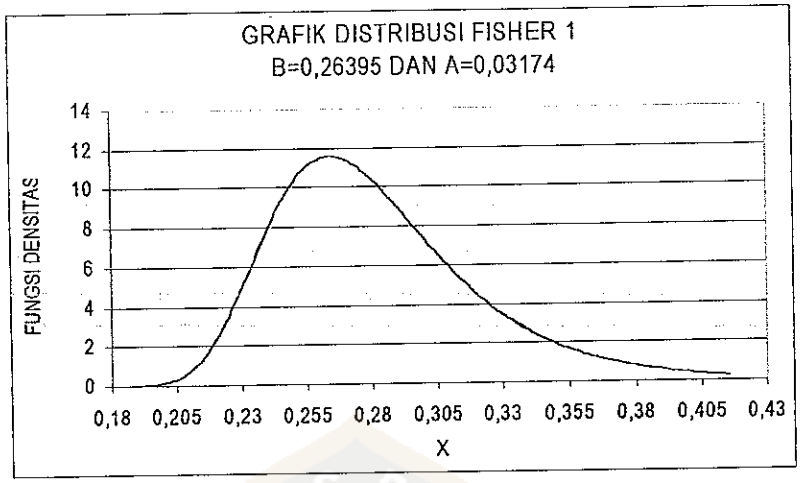
Grafik 3.1.1 Grafik Distribusi Weibul 3 metode teoritik



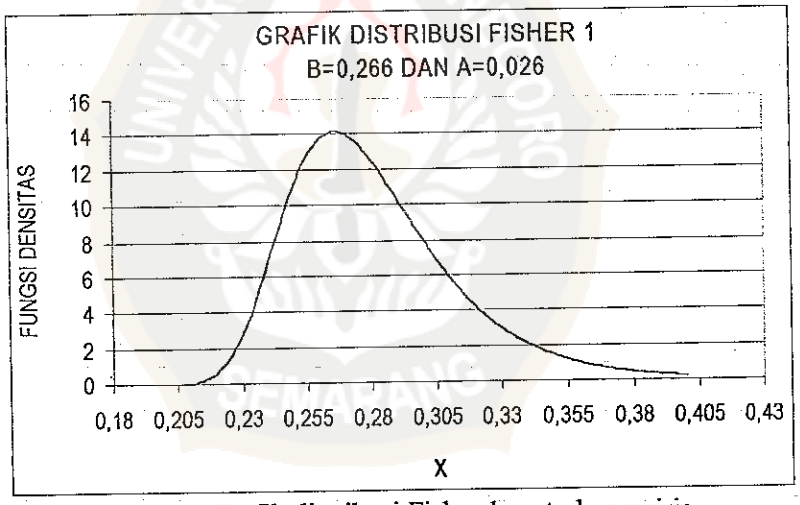
Grafik 3.1.2. Grafik Distribusi Weibul 3 metode empiris



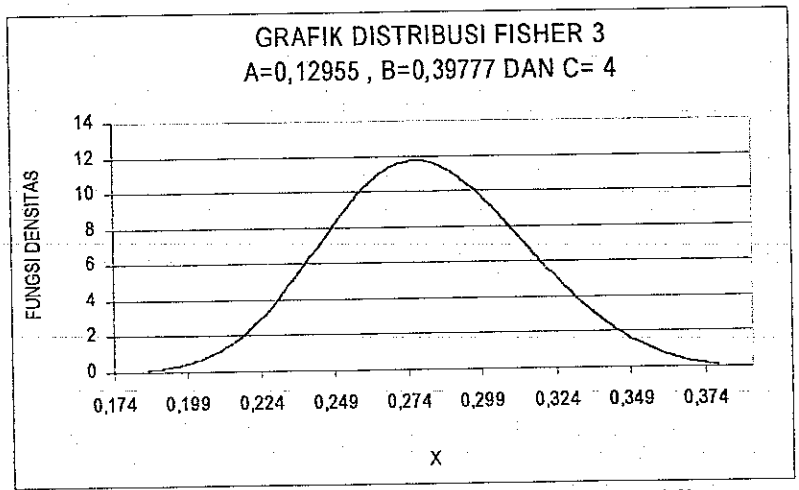
Grafik 3.1.3. Grafik Distribusi Weibul 2 metode teoritik



Grafik 3.1.4. Grafik distribusi Fisher 1 metode teoritik

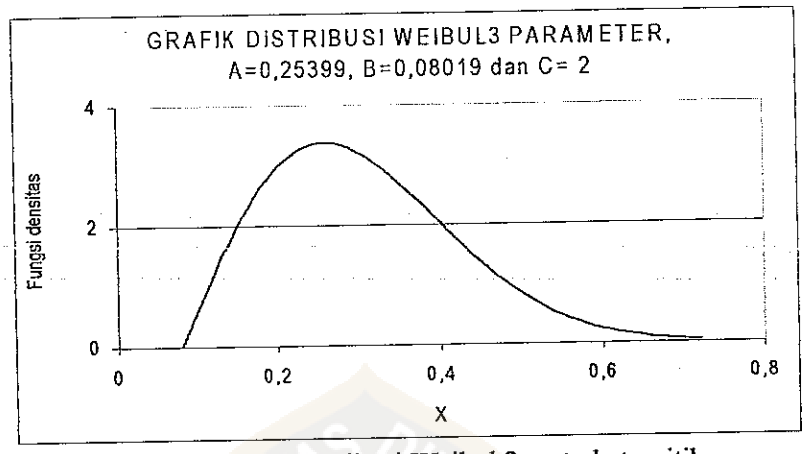


Grafik 3.1.5. Grafik distribusi Fisher 1 metode empiris

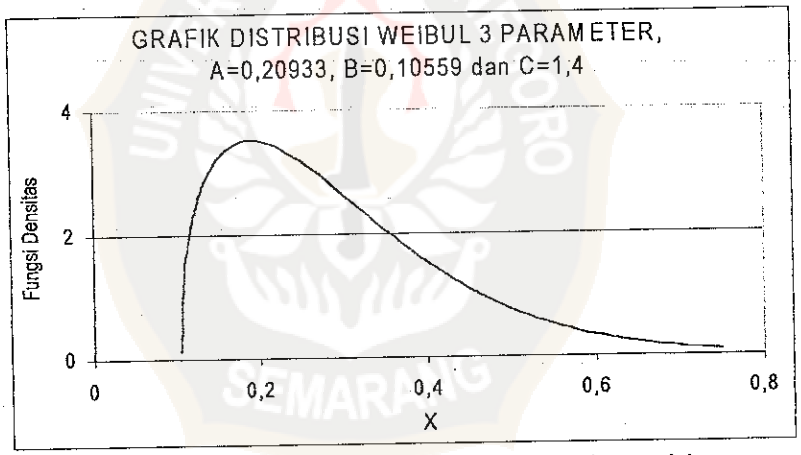


Grafik 3.1.6. Grafik distribusi Fisher 3 metode teoritik

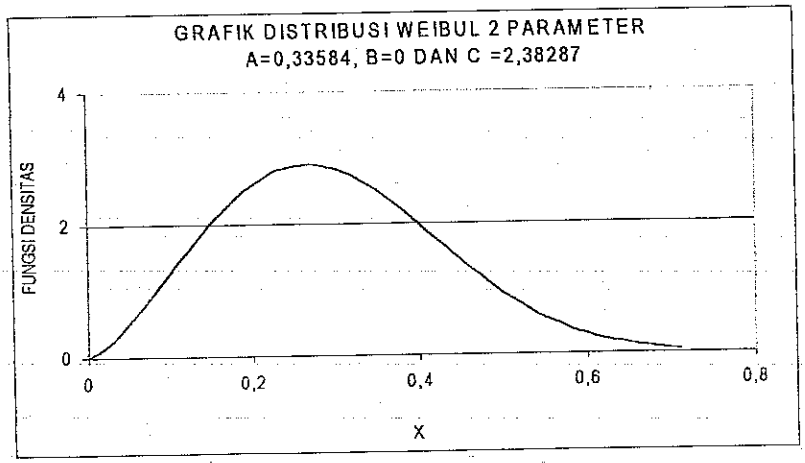
2. GRAFIK FUNGSI DENSITAS DATA PENGAMATAN 25 OKTOBER 2000



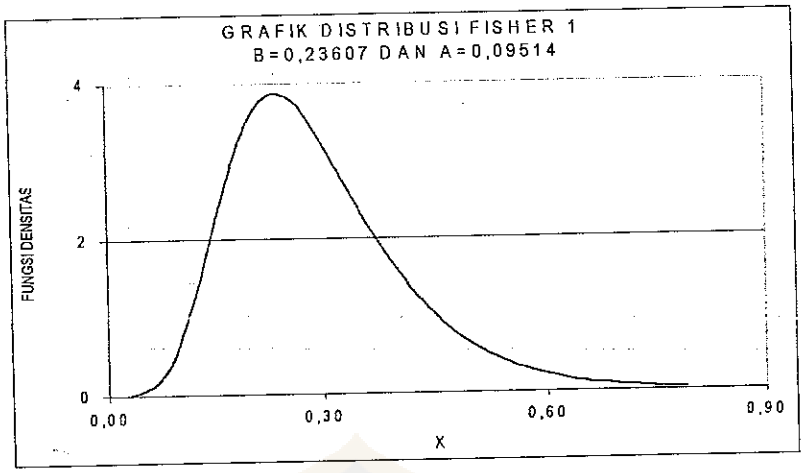
Grafik 3.2.1. Grafik distribusi Weibul 3 metode teoritik



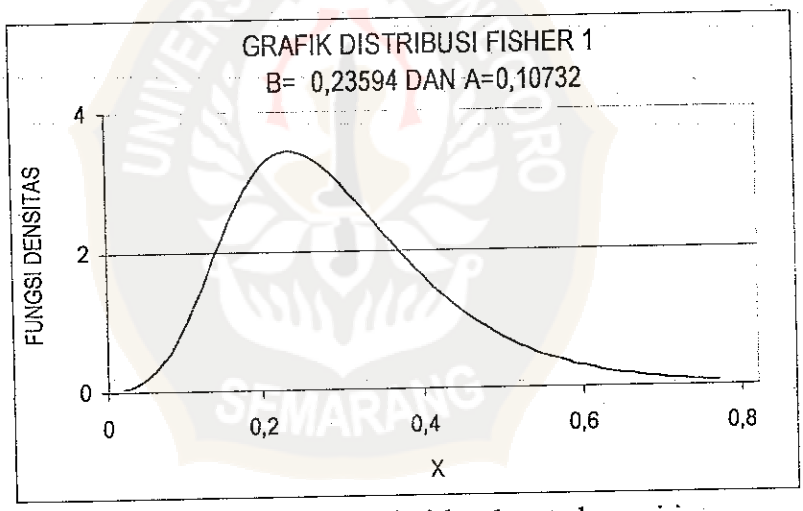
Grafik 3.2.2. Grafik Distribusi Weibul 3 metode empiris



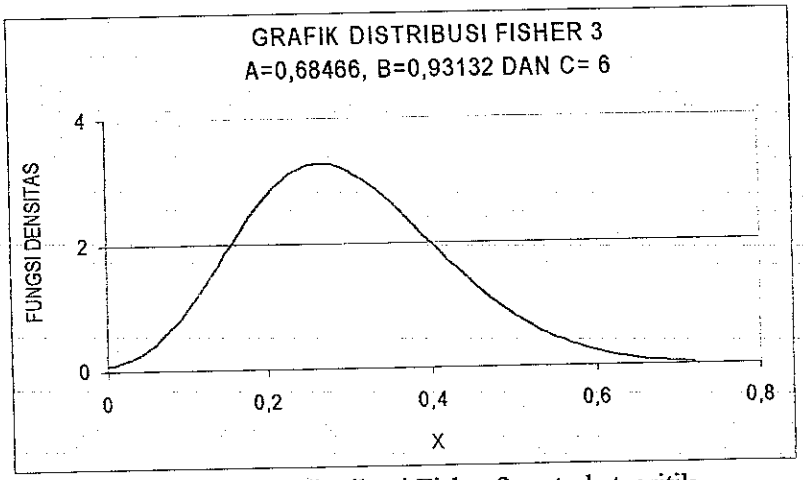
Grafik 3.2.3.Grafik Distribusi Weibul 2 metode teoritik



Grafik 3.2.4. Grafik distribusi Fisher 1 metode teoritik



Grafik 3.2.5.Grafik distribusi Fisher 1 metode empiris



Grafik.3.2.6. Grafik distribusi Fisher 3 metode teoritik

Lampiran 4 : Tabel Perhitungan Uji Kolmogorov-Smirnov

1. DATA PENGAMATAN 25 JUNI 1999

X	k	Frekuensi kumulatif	SN(X)
0	0	0	0
0.200	1	1	0.02083
0.230	2	3	0.06250
0.240	5	8	0.16667
0.245	1	9	0.18750
0.250	2	11	0.22917
0.255	4	15	0.31250
0.270	3	18	0.37500
0.275	1	19	0.39583
0.280	8	27	0.56250
0.285	1	28	0.58333
0.290	2	30	0.62500
0.300	9	39	0.81250
0.310	3	42	0.87500
0.312	1	43	0.89583
0.315	1	44	0.91667
0.320	1	45	0.93750
0.350	1	46	0.95833
0.355	2	48	1

4.1.Tabel Frekuensi Kumulatif Data 25 Juni 1999

X	SN(X)	F*(X)	DN
0	0	0	0
0.200	0.02083	0.00306	0.01778
0.230	0.06250	0.06615	0.00365
0.240	0.16667	0.11843	0.04824
0.245	0.18750	0.15188	0.03562
0.250	0.22917	0.19024	0.03893
0.255	0.31250	0.23330	0.07920
0.270	0.37500	0.38603	0.01103
0.275	0.39583	0.44235	0.04652
0.280	0.56250	0.49980	0.06270
0.285	0.58333	0.55728	0.02605
0.290	0.62500	0.61370	0.01130
0.300	0.81250	0.71920	0.09330
0.310	0.87500	0.80929	0.06571
0.312	0.89583	0.82503	0.07080
0.315	0.91667	0.84714	0.06953
0.320	0.93750	0.87987	0.05763
0.350	0.95833	0.98233	0.02399
0.355	1	0.98824	0.01176
0.28025		0.50268	

4.1.1.Tabel Uji K-S untuk Weibull 3 Empiris

X	SN(X)	F*(X)	DN
0	0	0	0
0.20	0.02083	0.00675	0.01409
0.23	0.06250	0.06925	0.00675
0.24	0.16667	0.11742	0.04925
0.25	0.18750	0.14828	0.03922
0.25	0.22917	0.18390	0.04527
0.26	0.31250	0.22545	0.08705
0.27	0.37500	0.37111	0.00389
0.28	0.39583	0.42678	0.03095
0.28	0.56250	0.48440	0.07810
0.29	0.58333	0.54288	0.04045
0.29	0.62500	0.60104	0.02396
0.30	0.81250	0.72541	0.08709
0.31	0.87500	0.80744	0.06756
0.31	0.89583	0.82425	0.07159
0.32	0.91667	0.84782	0.06885
0.32	0.93750	0.88263	0.05487
0.35	0.95833	0.98652	0.02819
0.36	1	0.99165	0.00835
0.28055		0.49081	

4.1.2.Tabel Uji K-S untuk Weibull 3 Teoritik

X	SN(X)	F*(X)	DN
0	0	0	0
0.2	0.02083	3.20E-06	0.02083
0.23	0.0625	0.01844	0.04406
0.24	0.16667	0.06599	0.10068
0.245	0.1875	0.10617	0.08133
0.25	0.22917	0.15718	0.07199
0.255	0.3125	0.21726	0.09524
0.27	0.375	0.42426	0.04926
0.275	0.39583	0.49292	0.09709
0.28	0.5625	0.55786	0.00464
0.285	0.58333	0.61783	0.0345
0.29	0.625	0.67214	0.04714
0.3	0.8125	0.76304	0.04946
0.31	0.875	0.83186	0.04314
0.312	0.89583	0.84327	0.05256
0.315	0.91667	0.85908	0.05758
0.32	0.9375	0.88222	0.05528
0.35	0.95833	0.96124	0.00291
0.355	1	0.96791	0.03209
0.28048		0.56385	

4.1.3.Tabel Uji K-S untuk Fisher 1 Empiris

X	SN(X)	F*(X)	DN
0	0	0	0
0.200	0.02083	0.00055	0.02028
0.230	0.06250	0.05424	0.00826
0.240	0.16667	0.11923	0.04744
0.245	0.18750	0.16256	0.02494
0.250	0.22917	0.21184	0.01733
0.255	0.31250	0.26560	0.04690
0.270	0.37500	0.43760	0.06260
0.275	0.39583	0.49362	0.09778
0.280	0.56250	0.54711	0.01539
0.285	0.58333	0.59738	0.01405
0.290	0.62500	0.64397	0.01897
0.300	0.81250	0.72530	0.08720
0.310	0.87500	0.79107	0.08393
0.312	0.89583	0.80247	0.09336
0.315	0.91667	0.81856	0.09811
0.320	0.93750	0.84280	0.09470
0.350	0.95833	0.93570	0.02264
0.355	1	0.94480	0.05520
0.28227		0.57037	

4.1.4. Tabel Uji K-S untuk Fisher 1 Teoritik

X	SN(X)	F*(X)	DN
0	0	0	0
0.200	0.02083	0.00438	0.01646
0.230	0.06250	0.06005	0.00245
0.240	0.16667	0.11085	0.05582
0.245	0.18750	0.14460	0.04290
0.250	0.22917	0.18401	0.04516
0.255	0.31250	0.22877	0.08373
0.270	0.37500	0.38823	0.01323
0.275	0.39583	0.44641	0.05057
0.280	0.56250	0.50512	0.05738
0.285	0.58333	0.56318	0.02015
0.290	0.62500	0.61947	0.00553
0.300	0.81250	0.72297	0.08953
0.310	0.87500	0.81003	0.06497
0.312	0.89583	0.82520	0.07063
0.315	0.91667	0.84652	0.07015
0.320	0.93750	0.87821	0.05929
0.350	0.95833	0.98168	0.02335
0.355	1	0.98819	0.01181
0.28035		0.50922	

4.1.5.Tabel Uji K-S untuk Fisher 3 Teoritik

X	SN(X)	F*(X)	DN
0	0	0	0
0.200	0.02083	0.03028	0.00944
0.230	0.06250	0.10201	0.03951
0.240	0.16667	0.14578	0.02089
0.245	0.18750	0.17267	0.01483
0.250	0.22917	0.20322	0.02595
0.255	0.31250	0.23761	0.07489
0.270	0.37500	0.36418	0.01082
0.275	0.39583	0.41363	0.01779
0.280	0.56250	0.46600	0.09650
0.285	0.58333	0.52060	0.06273
0.290	0.62500	0.57652	0.04848
0.300	0.81250	0.68788	0.12462
0.310	0.87500	0.79032	0.08468
0.312	0.89583	0.80888	0.08695
0.315	0.91667	0.83520	0.08146
0.320	0.93750	0.87462	0.06288
0.350	0.95833	0.99030	0.03197
0.355	1	0.99483	0.00517
0.27925		0.45798	

4.1.6.Tabel Uji K-S untuk Weibull 2 Teoritik

X	SN(X)	F*(X)	DN
0	0	0	0
0.15	0.15385	0.10985	0.04400
0.20	0.42308	0.22645	0.19663
0.25	0.57692	0.37867	0.19825
0.30	0.69231	0.54082	0.15149
0.35	0.73077	0.68752	0.04325
0.40	0.80769	0.80379	0.00390
0.50	0.92308	0.93940	0.01633
0.55	0.96154	0.97059	0.00906
0.60	1	0.98724	0.01276
0.29614		0.52857	

4.2.6.Tabel Uji K-S untuk Fisher 3 Empiris

2. DATA PENGAMATAN 25 OKTOBER 2000

X	k	Frekuensi Kumulatif	SN(X)
0	0	0	0
0.15	4	4	0.15385
0.20	7	11	0.42308
0.25	4	15	0.57692
0.30	3	18	0.69231
0.35	1	19	0.73077
0.40	2	21	0.80769
0.50	3	24	0.92308
0.55	1	25	0.96154
0.60	1	26	1

4.2.Tabel Frekuensi Kumulatif Data 25 Oktober 2000

X	SN(X)	F*(X)	DN
0	0	0	0
0.15	0.15385	0.10784	0.04601
0.20	0.42308	0.27963	0.14345
0.25	0.57692	0.44825	0.12867
0.30	0.69231	0.59410	0.09820
0.35	0.73077	0.71126	0.01951
0.40	0.80769	0.80052	0.00718
0.50	0.92308	0.91174	0.01133
0.55	0.96154	0.94325	0.01829
0.60	1	0.96424	0.03576
0.29638		0.58449	

4.2.1.Tabel Uji K-S untuk Weibull 3 Empiris

X	SN(X)	F*(X)	DN
0	0	0	0
0.150	0.15385	0.07276	0.08108
0.200	0.42308	0.19949	0.22358
0.250	0.57692	0.36045	0.21648
0.300	0.69231	0.52714	0.16516
0.350	0.73077	0.67647	0.05430
0.400	0.80769	0.79514	0.01255
0.500	0.92308	0.93491	0.01183
0.550	0.96154	0.96734	0.00580
0.600	1	0.98483	0.01517
0.30528		0.54405	

4.2.2.Tabel Uji K-S untuk Weibull 3 Teoritik

X	SN(X)	F*(X)	DN
0	0	0	0
0.15	0.15385	0.10782	0.04603
0.20	0.42308	0.24714	0.17593
0.25	0.57692	0.41594	0.16098
0.30	0.69231	0.57665	0.11565
0.35	0.73077	0.70788	0.02289
0.40	0.80769	0.80508	0.00262
0.50	0.92308	0.91815	0.00493
0.55	0.96154	0.94782	0.01372
0.60	1	0.96693	0.03307
0.29789		0.57039	

4.2.3. Tabel Uji K-S untuk Fisher 1 Empiris

X	SN(X)	F*(X)	DN
0	0	0	0
0.15	0.15385	0.08449	0.06935
0.20	0.42308	0.23200	0.19107
0.25	0.57692	0.42156	0.15537
0.30	0.69231	0.60007	0.09224
0.35	0.73077	0.73938	0.00861
0.40	0.80769	0.83651	0.02881
0.50	0.92308	0.93950	0.01643
0.55	0.96154	0.96378	0.00224
0.60	1	0.97842	0.02158
0.29098		0.57035	

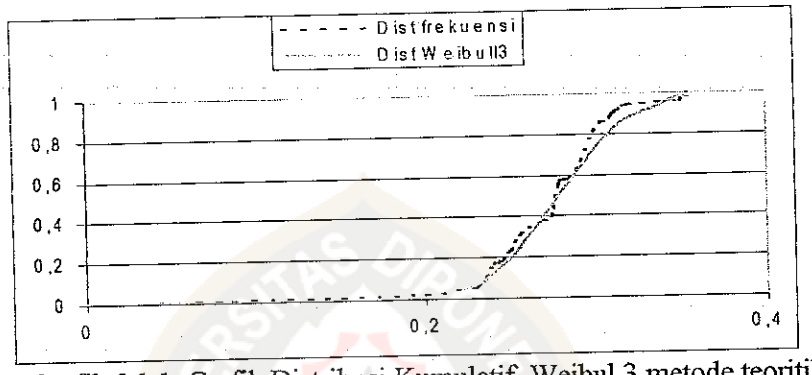
4.2.4.Tabel Uji K-S untuk Fisher 1 Teoritik

X	SN(X)	F*(X)	DN
0	0	0	0
0.15	0.15385	0.13629	0.01755
0.20	0.42308	0.25234	0.17073
0.25	0.57692	0.39038	0.18654
0.30	0.69231	0.5343	0.15801
0.35	0.73077	0.66826	0.06251
0.40	0.80769	0.78058	0.02711
0.50	0.92308	0.92433	0.00125
0.55	0.96154	0.96082	0.00072
0.60	1	0.98142	0.01858
0.29768		0.52773	

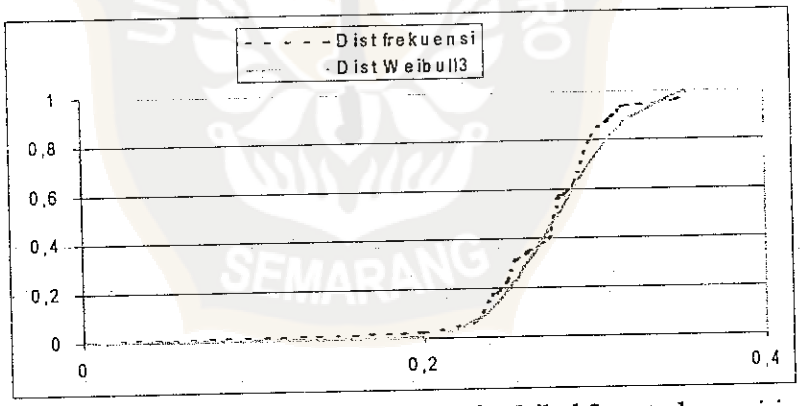
4.2.5.Tabel Uji K-S untuk Weibull 2 Teoritik

Lampiran 5 : Grafik Distribusi Kumulatif Weibull 3, Weibull 2, Fisher 1 dan Fisher 3

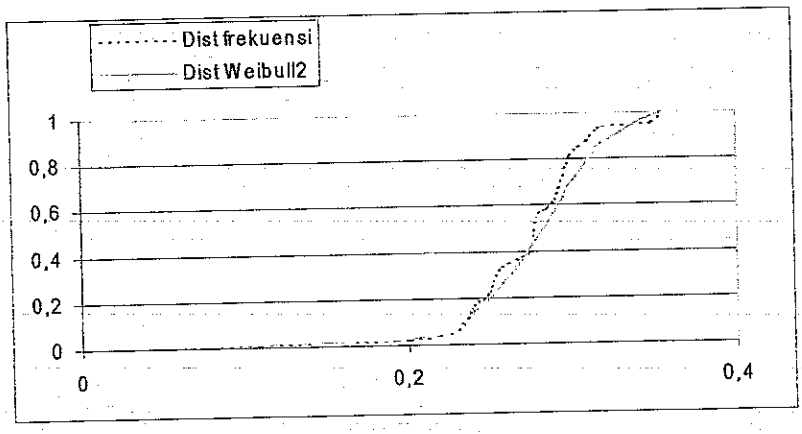
1. GRAFIK DISTRIBUSI KUMULATIF DATA PENGAMATAN 25 JUNI 1999



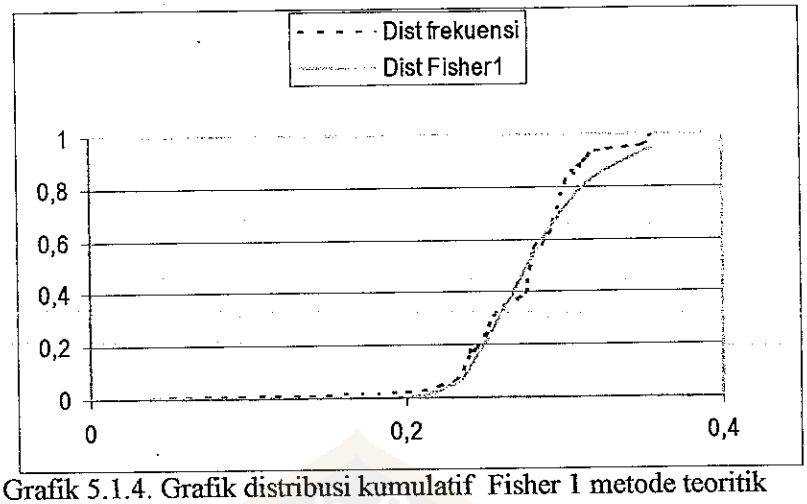
Grafik.5.1.1. Grafik Distribusi Kumulatif Weibul 3 metode teoritik



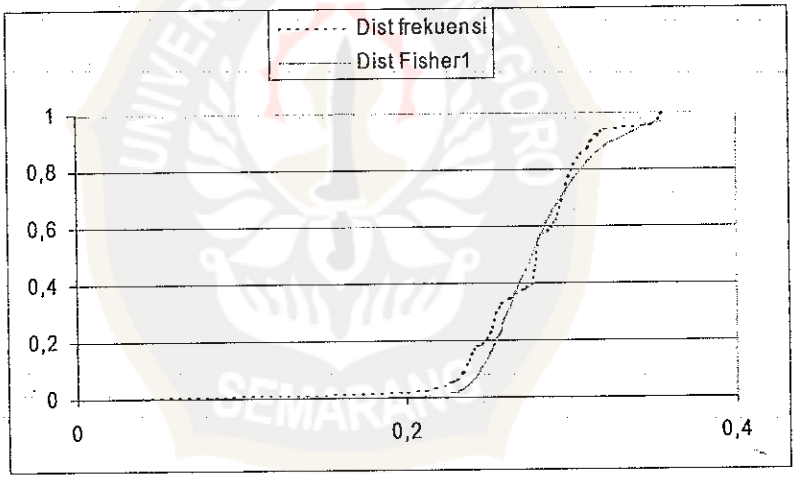
Grafik 5.1.2. Grafik Distribusi Kumulatif Weibul 3 metode empiris



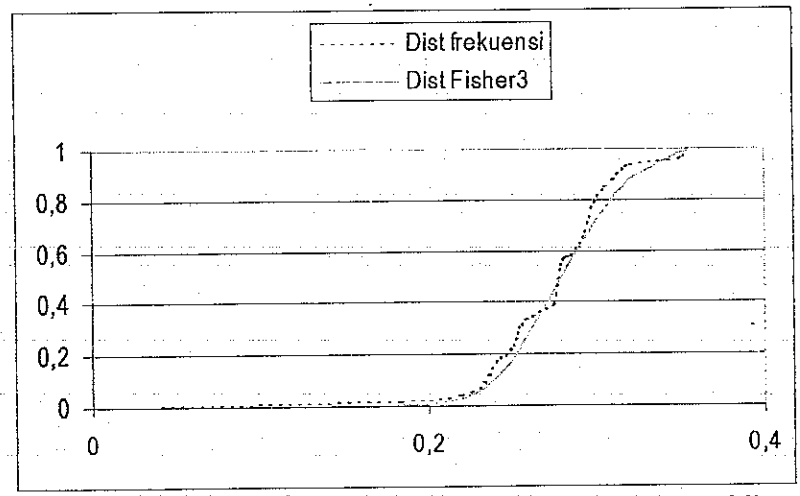
Grafik 5.1.3. Grafik Distribusi Kumulatif Weibul 2 metode teoritik



Grafik 5.1.4. Grafik distribusi kumulatif Fisher 1 metode teoritik

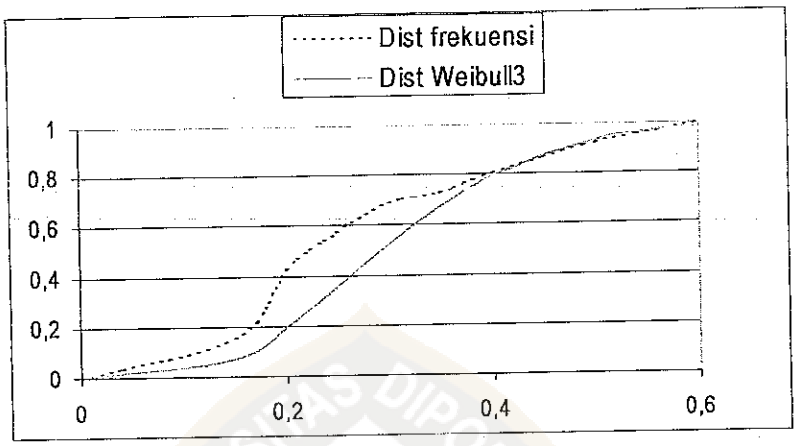


Grafik 5.1.5. Grafik distribusi kumulatif Fisher 1 metode empiris

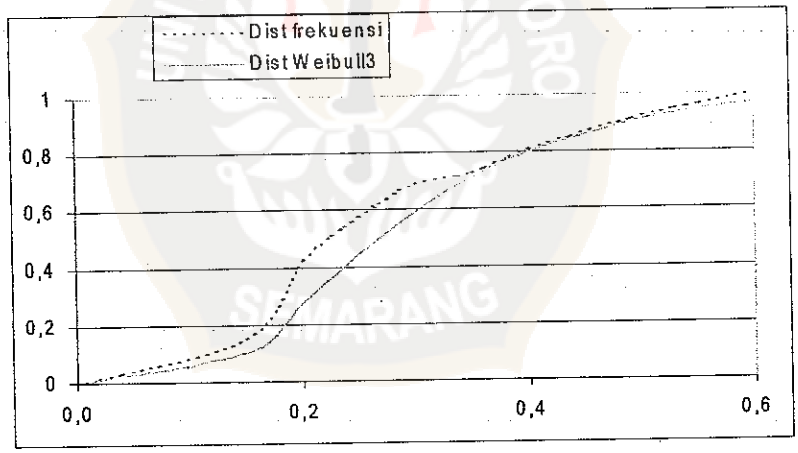


Grafik 5.1.6.Grafik distribusi kumulatif Fisher 3 metode teoritik

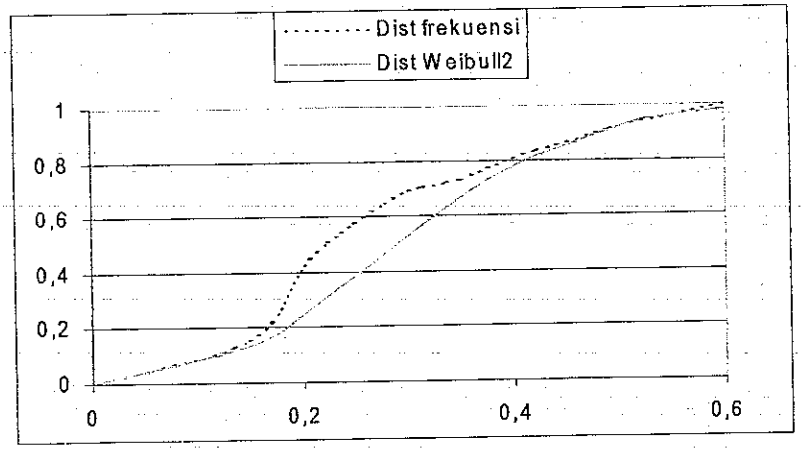
2. GRAFIK DISTRIBUSI KUMULATIF DATA PENGAMATAN 25 OKTOBER 2000



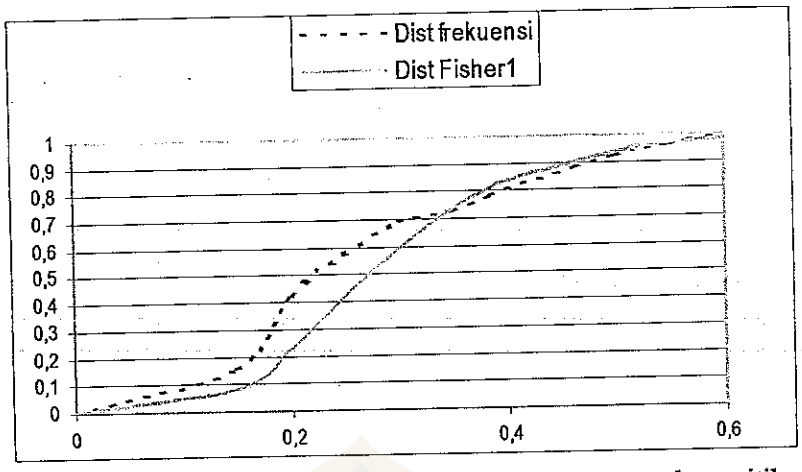
Grafik 5.2.1. Grafik distribusi kumulatif Weibul 3 metode teoritik



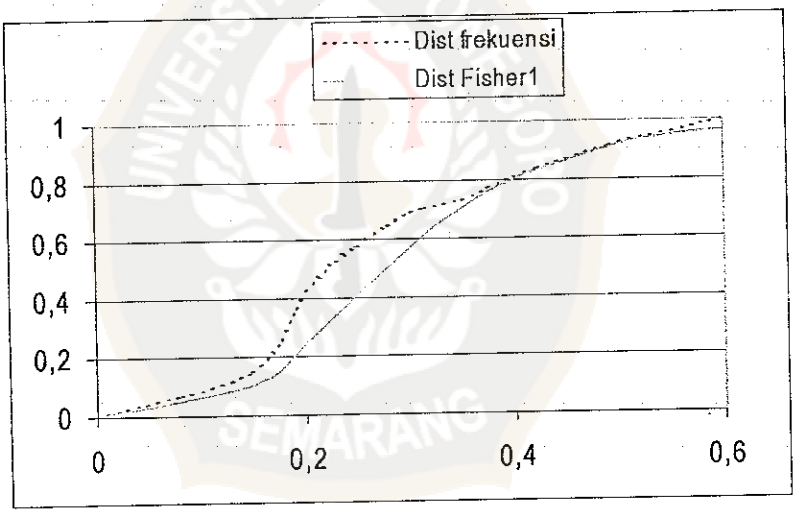
Grafik 5.2.2. Grafik Distribusi Kumulatif Weibul 3 metode empiris



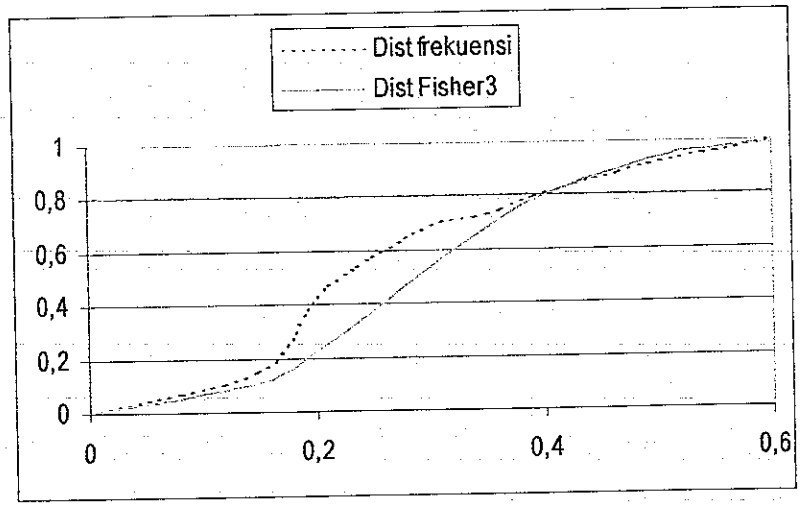
Grafik 5.2.3. Grafik Distribusi Kumulatif Weibul 2 metode teoritik



Grafik 5.2.4. Grafik distribusi kumulatif Fisher 1 metode teoritik



Grafik 5.2.5. Grafik distribusi kumulatif Fisher 1 metode empiris



Grafik 5.2.6. Grafik distribusi kumulatif Fisher 3 metode teoritik

Lampiran 6 : Tabel Uji Kolmogorov-Smirnov

n \ α	0,20	0,10	0,05	0,01
5	0,45	0,51	0,56	0,67
10	0,32	0,37	0,41	0,49
15	0,27	0,30	0,34	0,40
20	0,23	0,26	0,29	0,36
25	0,21	0,24	0,27	0,32
30	0,19	0,22	0,24	0,29
35	0,18	0,20	0,23	0,27
40	0,17	0,19	0,21	0,25
45	0,16	0,18	0,20	0,24
50	0,15	0,17	0,19	0,23
>50	$1,07/\sqrt{n}$	$1.22/\sqrt{n}$	$1.36/\sqrt{n}$	$1,63/\sqrt{n}$