> getwd()

[1] "C:/Users/tapud\_000/Documents"

> setwd("E:/Thesis- Evaluate European call options with exponential barriers/R")

> FPT=read.csv("fpt1.csv")

> attach(FPT)

> FPT

Stock Price Daily.Return

1 FPT 51.50 NA

2 FPT 51.40 -0.001943635

3 FPT 51.20 -0.003898640

4 FPT 51.00 -0.003913899

5 FPT 49.90 -0.021804630

6 FPT 49.30 -0.012096922

7 FPT 48.80 -0.010193768

8 FPT 48.75 -0.001025115

9 FPT 48.30 -0.009273637

10 FPT 48.05 -0.005189425

11 FPT 47.85 -0.004171018

12 FPT 48.20 0.007287903

13 FPT 48.75 0.011346176

14 FPT 48.95 0.004094172

15 FPT 49.00 0.001020929

16 FPT 49.00 0.000000000

17 FPT 48.85 -0.003065920

18 FPT 49.45 0.012207680

19 FPT 49.40 -0.001011634

20 FPT 48.65 -0.015298616

21 FPT 48.40 -0.005151995

22 FPT 48.35 -0.001033592

23 FPT 48.20 -0.003107201

24 FPT 48.35 0.003107201

25 FPT 48.75 0.008238976

26 FPT 48.10 -0.013423020

27 FPT 47.35 -0.015715357

28 FPT 47.70 0.007364578

29 FPT 47.90 0.004184107

30 FPT 48.20 0.006243517

31 FPT 48.50 0.006204777

32 FPT 48.60 0.002059733

33 FPT 48.50 -0.002059733

34 FPT 47.80 -0.014538158

35 FPT 47.75 -0.001046573

36 FPT 47.60 -0.003146306

37 FPT 47.50 -0.002103050

38 FPT 47.70 0.004201687

39 FPT 47.20 -0.010537505

40 FPT 47.10 -0.002120892

41 FPT 47.75 0.013706066

42 FPT 47.50 -0.005249356

43 FPT 47.40 -0.002107482

44 FPT 47.60 0.004210533

45 FPT 47.89 0.006073953

46 FPT 48.19 0.006244816

47 FPT 48.43 0.004967926

48 FPT 47.89 -0.011212742

49 FPT 47.40 -0.010284486

50 FPT 47.94 0.011328000

51 FPT 48.82 0.018189836

52 FPT 49.07 0.005107785

53 FPT 49.07 0.000000000

54 FPT 48.38 -0.014161345

55 FPT 47.99 -0.008093849

56 FPT 47.36 -0.013214665

57 FPT 47.55 0.004003798

58 FPT 47.21 -0.007176054

59 FPT 46.82 -0.008295272

60 FPT 45.74 -0.023337273

61 FPT 45.54 -0.004382128

62 FPT 45.25 -0.006388390

63 FPT 45.84 0.012954402

64 FPT 45.94 0.002179125

65 FPT 46.82 0.018974265

66 FPT 47.01 0.004049883

67 FPT 47.70 0.014571053

68 FPT 47.85 0.003139720

69 FPT 46.96 -0.018774942

70 FPT 46.62 -0.007266542

71 FPT 47.21 0.012576101

72 FPT 47.60 0.008227027

73 FPT 46.91 -0.014601889

74 FPT 45.74 -0.025257684

75 FPT 45.64 -0.002188664

76 FPT 45.45 -0.004171704

77 FPT 45.89 0.009634408

78 FPT 45.54 -0.007656168

79 FPT 45.40 -0.003078956

80 FPT 44.76 -0.014197222

81 FPT 45.74 0.021658305

82 FPT 46.47 0.015833755

83 FPT 46.62 0.003222691

84 FPT 46.52 -0.002147306

85 FPT 45.20 -0.028785241

86 FPT 45.35 0.003313090

87 FPT 44.76 -0.013095293

88 FPT 44.47 -0.006500079

89 FPT 44.27 -0.004507558

90 FPT 44.42 0.003382572

91 FPT 43.78 -0.014512726

92 FPT 44.22 0.010000083

93 FPT 43.29 -0.021255514

94 FPT 43.14 -0.003471020

95 FPT 43.39 0.005778359

96 FPT 42.36 -0.024024479

97 FPT 42.36 0.000000000

98 FPT 42.56 0.004710324

99 FPT 42.12 -0.010392158

100 FPT 42.12 0.000000000

101 FPT 41.72 -0.009542057

102 FPT 41.23 -0.011814483

103 FPT 41.72 0.011814483

104 FPT 40.97 -0.018140539

105 FPT 40.76 -0.005138883

106 FPT 40.47 -0.007140249

107 FPT 40.38 -0.002226346

108 FPT 39.96 -0.010455659

109 FPT 39.88 -0.002004009

110 FPT 39.63 -0.006288538

111 FPT 39.88 0.006288538

112 FPT 40.05 0.004253728

113 FPT 40.13 0.001995511

114 FPT 40.13 0.000000000

115 FPT 40.30 0.004227285

116 FPT 39.21 -0.027419653

117 FPT 39.30 0.002292703

118 FPT 39.21 -0.002292703

119 FPT 39.21 0.000000000

120 FPT 38.76 -0.011543029

121 FPT 38.80 0.001031460

122 FPT 38.38 -0.010883756

123 FPT 38.09 -0.007584710

124 FPT 38.17 0.002098086

125 FPT 38.25 0.002093694

126 FPT 38.25 0.000000000

127 FPT 38.38 0.003392930

128 FPT 38.38 0.000000000

129 FPT 38.13 -0.006535117

130 FPT 38.42 0.007576783

131 FPT 39.42 0.025695144

132 FPT 39.67 0.006321933

133 FPT 39.17 -0.012684087

134 FPT 39.21 0.001020669

135 FPT 39.21 0.000000000

136 FPT 38.84 -0.009481173

137 FPT 39.21 0.009481173

138 FPT 38.71 -0.012833852

139 FPT 39.46 0.019189536

140 FPT 39.30 -0.004062982

141 FPT 39.63 0.008361888

142 FPT 39.55 -0.002020713

143 FPT 39.71 0.004037351

144 FPT 39.80 0.002263867

145 FPT 40.05 0.006261761

146 FPT 38.46 -0.040509933

147 FPT 38.88 0.010861239

148 FPT 38.88 0.000000000

149 FPT 38.30 -0.015030083

150 FPT 38.13 -0.004448522

151 FPT 38.00 -0.003415214

152 FPT 38.13 0.003415214

153 FPT 38.17 0.001048493

154 FPT 38.38 0.005486624

155 FPT 37.96 -0.011003517

156 FPT 38.21 0.006564288

157 FPT 38.21 0.000000000

158 FPT 38.34 0.003396476

159 FPT 38.09 -0.006541957

160 FPT 37.92 -0.004473103

161 FPT 38.13 0.005522696

162 FPT 38.25 0.003142186

163 FPT 38.84 0.015307083

164 FPT 38.38 -0.011914153

165 FPT 38.38 0.000000000

166 FPT 38.21 -0.004439229

167 FPT 37.88 -0.008673993

168 FPT 37.59 -0.007685211

169 FPT 37.80 0.005571045

170 FPT 37.80 0.000000000

171 FPT 38.38 0.015227388

172 FPT 38.71 0.008561474

173 FPT 37.38 -0.034962163

174 FPT 37.09 -0.007788411

175 FPT 37.17 0.002154593

176 FPT 37.21 0.001075558

177 FPT 37.13 -0.002152274

178 FPT 36.96 -0.004589021

179 FPT 37.30 0.009157080

180 FPT 37.46 0.004280370

181 FPT 37.63 0.004527908

182 FPT 37.30 -0.008808278

183 FPT 37.09 -0.005645935

184 FPT 36.88 -0.005677993

185 FPT 36.54 -0.009261848

186 FPT 36.54 0.000000000

187 FPT 37.04 0.013590859

188 FPT 36.71 -0.008949212

189 FPT 37.46 0.020224500

190 FPT 38.34 0.023220041

191 FPT 38.46 0.003125003

192 FPT 38.38 -0.002082250

193 FPT 37.71 -0.017611179

194 FPT 37.50 -0.005584378

195 FPT 37.63 0.003460672

196 FPT 37.75 0.003183871

197 FPT 37.42 -0.008780155

> DailyReturn=na.omit(Daily.Return)

> DailyReturn

[1] -0.001943635 -0.003898640 -0.003913899 -0.021804630 -0.012096922 -0.010193768

[7] -0.001025115 -0.009273637 -0.005189425 -0.004171018 0.007287903 0.011346176

[13] 0.004094172 0.001020929 0.000000000 -0.003065920 0.012207680 -0.001011634

[19] -0.015298616 -0.005151995 -0.001033592 -0.003107201 0.003107201 0.008238976

[25] -0.013423020 -0.015715357 0.007364578 0.004184107 0.006243517 0.006204777

[31] 0.002059733 -0.002059733 -0.014538158 -0.001046573 -0.003146306 -0.002103050

[37] 0.004201687 -0.010537505 -0.002120892 0.013706066 -0.005249356 -0.002107482

[43] 0.004210533 0.006073953 0.006244816 0.004967926 -0.011212742 -0.010284486

[49] 0.011328000 0.018189836 0.005107785 0.000000000 -0.014161345 -0.008093849

[55] -0.013214665 0.004003798 -0.007176054 -0.008295272 -0.023337273 -0.004382128

[61] -0.006388390 0.012954402 0.002179125 0.018974265 0.004049883 0.014571053

[67] 0.003139720 -0.018774942 -0.007266542 0.012576101 0.008227027 -0.014601889

[73] -0.025257684 -0.002188664 -0.004171704 0.009634408 -0.007656168 -0.003078956

[79] -0.014197222 0.021658305 0.015833755 0.003222691 -0.002147306 -0.028785241

[85] 0.003313090 -0.013095293 -0.006500079 -0.004507558 0.003382572 -0.014512726

[91] 0.010000083 -0.021255514 -0.003471020 0.005778359 -0.024024479 0.000000000

[97] 0.004710324 -0.010392158 0.000000000 -0.009542057 -0.011814483 0.011814483

[103] -0.018140539 -0.005138883 -0.007140249 -0.002226346 -0.010455659 -0.002004009

[109] -0.006288538 0.006288538 0.004253728 0.001995511 0.000000000 0.004227285

[115] -0.027419653 0.002292703 -0.002292703 0.000000000 -0.011543029 0.001031460

[121] -0.010883756 -0.007584710 0.002098086 0.002093694 0.000000000 0.003392930

[127] 0.000000000 -0.006535117 0.007576783 0.025695144 0.006321933 -0.012684087

[133] 0.001020669 0.000000000 -0.009481173 0.009481173 -0.012833852 0.019189536

[139] -0.004062982 0.008361888 -0.002020713 0.004037351 0.002263867 0.006261761

[145] -0.040509933 0.010861239 0.000000000 -0.015030083 -0.004448522 -0.003415214

[151] 0.003415214 0.001048493 0.005486624 -0.011003517 0.006564288 0.000000000

[157] 0.003396476 -0.006541957 -0.004473103 0.005522696 0.003142186 0.015307083

[163] -0.011914153 0.000000000 -0.004439229 -0.008673993 -0.007685211 0.005571045

[169] 0.000000000 0.015227388 0.008561474 -0.034962163 -0.007788411 0.002154593

[175] 0.001075558 -0.002152274 -0.004589021 0.009157080 0.004280370 0.004527908

[181] -0.008808278 -0.005645935 -0.005677993 -0.009261848 0.000000000 0.013590859

[187] -0.008949212 0.020224500 0.023220041 0.003125003 -0.002082250 -0.017611179

[193] -0.005584378 0.003460672 0.003183871 -0.008780155

attr(,"na.action")

[1] 1

attr(,"class")

[1] "omit"

> qqnorm(DailyReturn)

> qqline(DailyReturn)

> qqline(DailyReturn,col=2)

> plot(density(DailyReturn))

> shapiro.test(DailyReturn)

Shapiro-Wilk normality test

data: DailyReturn

W = 0.98184, p-value = 0.01222

European barrier call option with rebates are cheaper than the respective standard European options because a zero payoff maybe occur before expiry time T.