SOLUÇÕES DOS EXERCÍCIOS PROPOSTOS

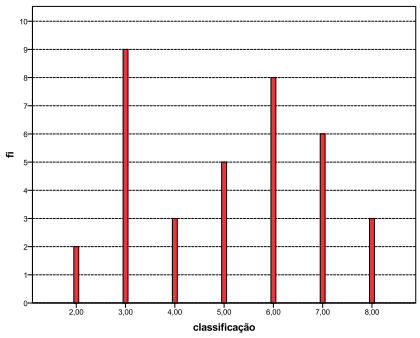
FICHA Nº1 - DESCRITIVA

1.

a)

xi	fi	fri(%)	Fi	Fri (%)
2	2	5.6	2	5.6
3	9	25.0	11	30.6
4	3	8.3	14	38.9
5	5	13.9	19	52.8
6	8	22.2	27	75.0
7	6	16.7	33	91.7
8	3	8.3	36	100.0
Total	36	100,0		

b) $\bar{x} = 5.056$; $s = 1.8197$; c)
Mediana=5.0; moda =3



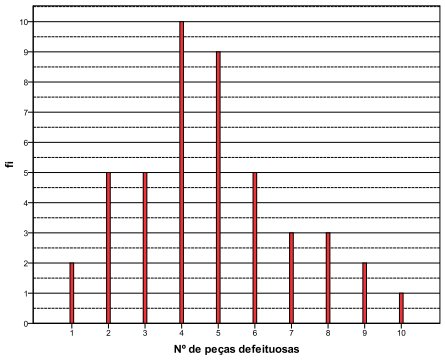
2.

a) Variável discreta

b)

xi	fi	fri(%)	Fi	Fri(%)
1	2	4.4	2	4.4
2	5	11.1	7	15.6
3	5	11.1	12	26.7
4	10	22.2	22	48.9
5	9	20.0	31	68.9
6	5	11.1	36	80.0
7	3	6.7	39	86.7
8	3	6.7	42	93.3
9	2	4.4	44	97.8
10	1	2.2	45	100.0
Total	45	100.0		

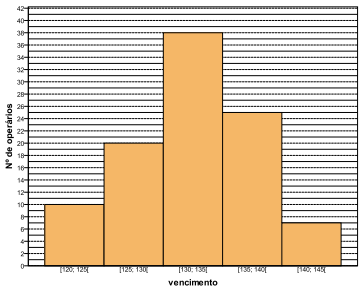
c)



d) $\bar{x} = 4.78$ $s^2 = 4.677$
Mediana=5.0; moda =4

3.

a)



b)
$\bar{x} = 132.45$ $s = 5.34$
Mediana=132.6; moda =132.9

c)(i) 68% (ii) 95%

4.

a)

xi	fi	fri (%)	Fri (%)
422	2	2	2
427	5	5	7
432	6	6	13
437	14	14	27
442	18	18	45
447	27	27	72
452	19	19	91
457	8	8	99
462	1	1	100
Total	100	100	

b) $\bar{x} = 444.2$, $s = 8.5$

c) 28%

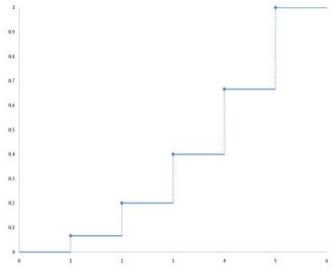
5. a) $\bar{x} = 831.2$, Med=830.59, Mod=830, $s^2 = 647.85$ b) 32% c) 86%

FICHA Nº2 - PROBABILIDADES

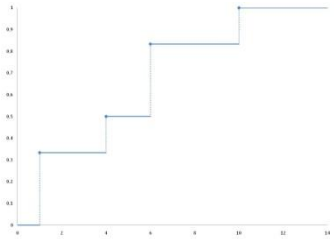
1. a) sim b) não c) 0.3077
2. a) 5/6 b) 1/6
3. a) 2/9 b) 5/12
4. a) 1/3 b) 1/6 c) 1/3 d) 5/6
5. a) 1/6 b) 1/2 c) 1/12 d) 9/12
6. a) 1/24 b) 9/24 c) 5/8 d) 1/8
7. a) 3/4 b) 3/4 c) 1/3 d) 1/4 e) 2/3 f) 1/4 g) 3/4 h) 1/3
8. 0.75
9. 1/7
10. 1/13
11. a) falha humana=1/2, falha travões=rebentamento pneu=1/4 b) 0.9524
12. 0.4545
13. a) 0.5

FICHA Nº 3 - DISTRIBUIÇÕES DE PROBABILIDADE

4. $F(x)=\begin{cases} 0 & x<1 \\ 1/15 & 1\le x<2 \\ 3/15 & 2\le x<3 \\ 6/15 & 3\le x<4 \\ 10/15 & 4\le x<5 \\ 1 & x\ge 5 \end{cases}$



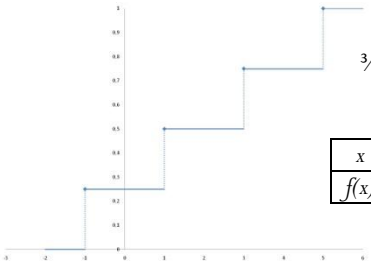
5. a) ½



b) 1/6

c)

x	1	4	6	10
$f(x)$	1/3	1/6	1/3	1/6

6. 

¾; ¼; ½; ½; ¼;

x	-1	1	3	5
$f(x)$	1/4	1/4	1/4	1/4

7. a) 3/5 b) $2/k(k^2+1)$

8. b) 4/5

c) $F(x)=\begin{cases} 0 & se \quad x\le 2 \\ \frac{1}{5}(x-2) & se \quad 2<x<7 \\ 1 & se \quad x\ge 7 \end{cases}$

9. a) 0.54; 0.1519 b) $F(x)=\begin{cases} 0 & se \quad x\le 2 \\ \frac{x^2}{16}+\frac{x}{8}-\frac{1}{2} & se \quad 2<x<4 \\ 1 & se \quad x\ge 4 \end{cases}$

10. a) ¼ b) ¼; ½ c) $F(x)=\begin{cases} 0 & se \quad x\le 0 \\ \frac{1}{2}\sqrt{x} & se \quad 0<x<4 \\ 1 & se \quad x\ge 4 \end{cases}$

11. k = 2

12. a) k=6 b) 0,15625; 0.5 c) $F(x)=\begin{cases} 0 & se \quad x\le 0 \\ 6\left(\frac{x^2}{2}-\frac{x^3}{3}\right) & se \quad 0<x<1 \\ 1 & se \quad x\ge 1 \end{cases}$

13. ½; 0; $f(x)=\begin{cases} 1/2 & -1<x<1 \\ 0 & \text{outros valores} \end{cases}$

FICHA Nº 4 – ESPERANÇA MATEMÁTICA

1. 1/7; 1.837
2. 3.08; 0.347
3. 1; 1/6
4. a) 3.67; 15; 1.531 b) 183.04
5. a) 1.8205; 3.641; 7.889; 0.327 b) 10.7095

FICHA Nº 5 – FAMÍLIAS DE DISTRIBUIÇÕES

1. a) 0.1901 b) 0.0113 c) 0.3917
2. a) 0.2463 b) 0.8593 c) 3.2
3. a) 0.0198 b) 0.9510 c) 2 d) 1.407
4. a) 0.9 b) 0.99 c) 0.999
5. a) 0.7625 b) 0.8867 c) 0.6492
6. a) 0.0821 b) 0.0653 c) 0.384
7. a) 0 b) 0.997 c) 0.0821 d)0.9179
8. a) 0.034 b) 5
9. a) 0.2231 b) 0.066 c) 0.2510
10. a) 3.6 b) 0.874 c) 0.2125
11. a) 0.1667 b) 0.67
12. 20%

13. a) 0.3297 b) 0.2387
14. a) 0.6065 b) 0.5276
15. a) 0.181 b) 0.2231
16. a) 0.1056 b) 0.3446 c) 0.7528
17. a) 0.0918 b) 27 meses
18. a) 0.1056 b) 11.632 min. c) 11:15
19. a) 0.0668 b) 0.0062 c) 0.9198
20. a) 0.1056 b) 0.0062 c) 0.5934
21. a) 8.8%, 40.82%, 40.82%, 8.8%, 0.38% b) 11 pares
22. 0.0104
23. a) 0.0386 b) 0.0823 c) 0.8731
24. a) 0.0786 b) 0.1423

FICHA Nº 6 - DISTRIBUIÇÕES AMOSTRAIS

1. a) 325 b) 2 c) 0.0606 d) 0.8186 e) 0.1587 f) 0.0668
2. a) 0.0132 b) 0.1335 c) 0.6648
3. 0.0244
4. a) 0.8258 b)0.8315
5. a) 4 b) 0.0456

FICHA Nº 7 – ESTIMADORES PONTUAIS

1. $t_T(\theta^2) = 0$
2. a) W_1, W_3 b) $\text{var}[W_1] = \frac{3}{8}\sigma^2$, $\text{var}[W_3] = 0.34\sigma^2$ c) $ef(W_1, W_3) = 1.103$
3. T_1
4. $\hat{\theta} = -\frac{n}{\sum_{i=1}^{n} \ln x_i}$
5. $\hat{\theta}_1 = \min x_i = X_{(1)}$ $\hat{\theta}_2 = \bar{X} - X_{(1)}$
6. $\hat{\theta} = \frac{n}{\sum_{i=1}^{n} x_i^{\alpha}}$
7. $\hat{\theta} = 0.877$
8. a) $\hat{\theta}_1 = \min x_i = X_{(1)}$ $\hat{\theta}_2 = \bar{X} - X_{(1)}$ b) $\mu = \theta_1 + \theta_2$ c) $\hat{\mu} = \bar{X}$

FICHA Nº 8 - INTERVALOS DE CONFIANÇA

1. a) 64.3±6.57 b) 64.3±5.53
2. a) 2.28±0.56 b) (90%) 2.28±.0.32, (95%) 2.28±.0.40
3. a) 1.715 b) 0.15
4. 177500±1764
5. a) 45±2.08 b) 45±1.47 c) 45±1.20
6. 136
7.]-4.21, 84.21[
8. a) 330±488.7 b) 330±270.95
9. a) –1.2±2.58 b) 2.58
10. a) 0.28 b) 0,05668
11. 0.082±0.024
12. 0.2±0.064
13. a) 0.58 b) 0.58±0.125,
14. a) 0.35±0.039 b) (95%) 0.35±0.047, (98%) 0.35±0.056
15. –0.27±0.120
16. 0.065±0.0354
17.]2.92, 6.58[
18.]0.000851, 0.0043[

19.]0.163, 0.918[

FICHA Nº 9 - TESTES HIPÓTESES

1. n=39, k=1.32
2. a) α=0.5 b) β=0.3
4. a) i) α=0.3, β=0.8 ii) α=0.3, β=0.6 b) C2
5. a) 0.0559 b) sindicato
6. b)ponto crítico 0.30256
7. a) α=0.0361

b)

p	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40
função potência	0.0361	0.1841	0.3958	0.6020	0.7639	0.8732	0.9383	0.9729

8. a) 0.8518

b)

θ	2	4	6	8	12	16	20
β	0.0158	0.0855	0.1283	0.1447	0.1455	0.1342	0.1215

9. a)

μ	37	38	39	40
α	0,0006	0,003	0,0122	0,0401

b)

μ	41	42	43	44	45	46	47	48
β	0,08944	0,7734	0,5987	0,4013	0,2266	0,1056	0,0401	0,0122

10. a) depende do valor de prova b) Sim
11. a) Não b) Sim c) Sim
12. Z=2.65, Rej.
13. Z=4.78 Rej.
14. T= -0.51 N.Rej.
15. T= -2.11 Rej.
16. T=0.99 N.Rej.
17. T=4.033 Rej.
18. Z=-3.84 Rej.
19. Z=1.08 N.Rej.
20. Z=4.82 Rej
21. Z=2.60, Rej.
22. Z=2.021 Rej
23. Z=-1.55 N.Rej
24. Z=-2.0 N.Rej.
25. Z= -2.5, Rej.
26. Q=32.11 Rej
27. Q=5.92 N.Rej.
28. F=5.49 Rej

FICHA Nº 10 – QUI-QUADRADO

1. Q=35 Rej
2. Q=8.46 Rej
3. Q=20 a) Rej b) Rej
4. Q=29.16 Rej
5. Q=1.4 N.Rej
6. Q=10.502 Rej
7. Q=21.892 Rej
8. Q=13.6 Rej
9. b) 0.0179, 0.1178, 0.3245, 0.3557, 0.1554, 0.0268, 0.0019 c) Q=1.45 N.Rej.
10. Q=6.05 N.Rej
11. Q=6.97 a) Rej b) N.Rej
12. Q=3.97 N.Rej
13. Q=1.3 N.Rej

FICHA Nº 11 – ANÁLISE DA VARIÂNCIA

1. a) F=8.42 Rej, b) 0.96±0.503
2. F=12.45 Rej
3. F=12.11 Rej
4. F=39.3 Rej
5. a) F1=51.67 Rej b) F2=23 Rej
6. b) F1=4.25 N.Rej, F2=4.90 N.Rej

7. F1=7.76 Rej, F2=8.07 Rej
8. F1=17.05 Rej, F2=4.43 N.Rej
9. F1=2.78 N.Rej, F2=2080.09 Rej, F3=1.06 N.Rej
10. F1=47.64 Rej, F2=20.02 Rej, F3=2.25 N.Rej

FICHA Nº 12 – TESTES NÃO PARAMÉTRICOS

1. H=12.02 Rej
2. b) H'=14.81 Rej
3. H'=9.27 Rej
4. T=30.25 Rej
5. T1=4/20 N.Rej
6. T1=2/6 N.Rej
7. b) T1=0.73 Rej
8. T1=0.75 Rej
9. T2=5/8 N.Rej
10. T2=3/6 N.Rej
11. T2=3/8 a) N.Rej, b) N.Rej
12. T2=3/12 N.Rej
13. T=0.290 N.Rej
14. T=0.3418 Rej
15. T=0.5832 Rej
16. T=0.4089 Rej
17. T1=0.1023 N.Rej
18. T1=0.1939 N.Rej
19. T2=0.1105 N.Rej
20. T2=0.2510 N.Rej
21. T2=0.2155 N.Rej

FICHA Nº 13 – REGRESSÃO E CORRELAÇÃO

1. a)1.184 , b)1.184±.248 , c)T1=1.51 N.Rej , d) r=0.845, [0.698, 1.068], e) $E[Y_0]=1.357$, erro=0.0443
2. $\hat{Y}_i = 51.27 + 1.518X_1 + 0.675X_2$
3. $\hat{Y}_i = 101.36 - 2.3577X_i + 0.0187X_i{}^2 - 5E^{-05}X_i{}^3$
4. k_1=170608, k_2=-2.057
5. a) $\hat{Y}_i = 3.471 - 0.088X_i$ b) T= 57.738 Rej. c) r^2=0.981 d)]-0.100, -0.076[
6. SPSS ou Excel
7. a) $\hat{Y}_i = -124.57 + 1.659 * QI + 1.439 * Horas$ b) 63.26
8. r =0.743
9. SPSS ou Excel
10. R =-0.334 N.Rej
11. r =0.857 ; r_s=0.689
12. a) r_s=-0.613 b) N.Rej
13. r_s=1 Rej
14. r_s =0.46 N.Rej
15. r_s =0.78 Rej