(01) RC = { 0, 5} α = P(RC) = P{ X = 0 ou X = 5 / π = 0,50} = $(1/2)^5 + (1/2)^5$ = 1/16 = 6,25%

(02) RC = { 3 } α = P({ 3 }) = $(1/2)^3$ = 1/8 = 12,50%. Então β = P(Ac. H_0 / H_0 é Falsa} = P(X = 0, 1, 2 / π = 0,8} = $(1/5)^3 + 3(4/5)^1(1/5)^2 + 3(4/5)^2(1/5)^1$ = 48,80%

(03) RC { 4, 5} α = P(RC) = P({ X = 4 ou X = 5 / π = 1/6}) = 13/3888 = 0, 33%

(04) (04.1) RC = { (2, 3), (3, 2), (3, 3) } α = P(RC) = 0,20.0,20 + 0,20.0,20 + 0,20.0,20 = 12%

Poder do Teste = 1 - β = P(Rej. H_0 / H_0 é Falsa} = 0,20.0,40 + 0,20.0,40 + 0,40.0,40 = 32%

(04.2) RC = { (3, 1), (3, 2), (3, 3), (1, 3), (2, 3) } α = P(RC) = 5.0,04 = 0,20 = 20%

Poder do Teste = 1 - β = P(Rej. H_0 / H_0 é Falsa} = 4.0,08 + 0,16 = 0,48 = 48%

(05) RC = {X $\geq$ 20/Tetraedro A) α = P(RC) = P({ X $\geq$ 20 / Tet. A}) $\cong$ P(Z $\geq$ (19,5 - 12) / 3) = 0,62%

β = P(Ac. H_0 / H_0 é Falsa} = P(X < 20 / Tet. B} = 9,68% Poder = 1 - β = 100% - 9,68% = 90,32%

(06) (06.1) n = 2 C/R   RC = {BB, PP} α = P(RC) =(3/6).(3/6) + (3/6).(3/6) = 1/4 + 1/4 = 0,50 = 50%

(06.2) θ = 0 ou θ = 6 $\Rightarrow$ 1 - β = P(RC / θ = 0) = 0 + 1 = 100% = P(RC / θ = 6)

θ = 1 ou θ = 5 $\Rightarrow$ 1 - β = P(RC / θ = 1) = (1/6).(1/6) + (5/6).(5/6) = 13/18 = 72,22% = P(RC / θ = 5)

θ = 2 ou θ = 4 $\Rightarrow$ 1 - β = P(RC / θ = 2) = (2/6).(2/6) + (4/6).(4/6) = 5/9 = 55,56% = P(RC / θ = 4)

(07) (07.1) P(Erro I) = P($\overline{X}_A$ > 176) = P(Z > 176 - 175) = P(Z > 1) = 15,87%

P(Erro II) = P($\overline{X}_B$ < 176) = P(Z < 176 - 177) = P(Z < -1) = 15,87%

(07.2) P(Erro I) = P($\overline{X}_A$ > 176) = P[Z > (176 - 175)/0,5] = P(Z > 2) = 2,28%

P(Erro II) = P($\overline{X}_B$ < 176) = P[Z < (176 - 177)/2] = P(Z < -2) = 2,28%

(07.3) 5% = P(Erro I) = P($\overline{X}_A$ > 176) = P(Z > 176 - 175) $\Rightarrow$ P(Z > x - 175) = 5% $\Rightarrow$ x = 176,645.
Neste caso, deve-se rejeitar H_0 somente se a média for superior a 176,645.
P(Erro II) = P($\overline{X}_B$ < 176,645 - 177) = P(Z < -0,36) = 35,94%

(07.4) μ_B = 178 $\Rightarrow$ P(Erro II) = P($\overline{X}_B$ < 176 - 178) = P(Z < -2) = 2,28%

μ_B = 180 $\Rightarrow$ P(Erro II) = P($\overline{X}_B$ < 176 - 180) = P(Z < -4) = 0,00%

(08) (08.1) α = P(Rej. H_0 / H_0 é V) = P($\overline{X}$ > 1170 / μ = 1150) = P[Z > (1170 - 1150) / 15)] = P(Z > 1,33) = 9,18%

(08.2) β = P(Ac H_0 / H_1 é V) = P($\overline{X}$ < 1170 / μ = 1200) = P[Z < (1170 - 1200) / 20)] = P(Z < -1,50) = 6,68%

(08.3) P[Z > (x - 1150) / 15)] = P[Z < (x - 1200) / 20)] $\Rightarrow$ (x - 1150) / 15 = -(x - 1200) / 20 $\Rightarrow$ x = 1171,43