1. In Equations (2.7) and (2.8), let lamba\_h=a and x\_0+1=b. Then a and b can be found by

running the following code in Mathematica:

FindRoot[{0.95 == 1 - Gamma[b, 2a]/Gamma[b], 0.2 == 1 - Gamma[b, a]/Gamma[b]}, {a, 1}, {b, 1}]

To run the code, go to: Kernel 🡪 Evaluation 🡪 Evaluate Cells

1. In Equation (2.11), let n\*=n. Then the quantities k and n can be found by running the code:

FindRoot[{0.95 == Integrate[ Integrate[ 1/(2Pi)Exp[-(x^2 + y^2)/2], {x, -Infinity, Sqrt[2]k - y}], {y, -Infinity, k}], 0.25 == Integrate[Integrate[1/(2Pi)Exp[-(x^2 + y^2)/2], {x, -Infinity, Sqrt[2]k - 2Sqrt[n] - y}], {y, -Infinity, k - Sqrt[n]}]}, {k, 1}, {n, 1}]

To find the actual value of beta, we run the following lines of code:

k=1.87542

n=55/2\*(5/15)^2

actualbeta=NIntegrate[NIntegrate[1/(2Pi)Exp[-(x^2 + y^2)/2], {x, -Infinity, Sqrt[2]k - 2Sqrt[n] - y}], {y, -Infinity, k - Sqrt[n]}]

1. Consider Equations (2.15) and (2.16) with P(H1)=0.4. Note that from (2.15), b=0.024/(a-1). Therefore, remains to solve (2.16) to get a. In the integral, use the substitution y=(a-1)x/0.024. Then type in Mathematica:

FindRoot[0.4 == 1 – Gamma[a, a-1]/Gamma[a], {a, 2}]

1. The numbers in Table 2.1 are obtained by running the following code

for various values of t and n:

a = 7.81438

b = 0.024/(a - 1)

t = 600

n = 17

prob = 1 - Gamma[n + a, 0.024\*(t + 1/b)]/Gamma[n + a]