223 Probability Distributions Key

1. binomial
   $n = 20,\ p = .98$
   $P(x \geq 18) = 1 - P(x \leq 17) = 1 - \text{binomialcdf}(20, .98, 17) = .9929$

2. binomcdf(14..5, 5) = .211975

3. invNorm(.10, 41.2, 12.3) = 25.4369

4. binomial $n = 12,\ p = .25$
   binompdf(12, .5, 3) = .2581

5. $p = .63$ $n = 50$ $x = 40$ binompdf(50, .63, 40) = .00463
   binomcdf(50, .63, 19) = 1.347×10^{-6} yes, it would be unusual

6. normalcdf(90, E99, 81, 6.4) = .0798 (1 − .0798)
   93rd percentile

7. normalcdf(58, 80, 64, 3) = .977249...
   1 − this = .02275 left out
   × .02
   × 350,000,000
   159,251 people (possibly ÷ by 2 since only half of the population is women)

8. invNorm(.85, 21, 5.2) = 26.39 ⇒ 26

9. Suppose $n = 20$, $p = .21$
   1 − binomialcdf(20, .21, 9) = .003
   expected value = $np = 20 * .21 = 4.2$

10. binomialpdf(15, 1/6, 2) = .2726

11. normalcdf(70, 79, 78, 12) = .7475

12. binomialpdf(50, 6/20, 11) = .06018

13. p = .37, n = 20, 1 - binomcdf(20, .37, 9) = .165

14. normalcdf(6, 13, 11, 2.4) = .77906

15. 1 - normalcdf(1400, 1770, 1561, 103) = .080236

16. p = .63 n = 10 binomialcdf(10, .63, 4) = .1205

17. a. binomial
    b. binomial
    c. normal
    d. exponential } not binomial
    e. binomial
    f. negative binomial (not binomial)
    g hypergeometric (not binomial)