

from the wording of the question
this should be a directional test
 $H_0: p \geq 0.8$ $H_1: p < 0.8$

0/2

M246 TMA03

1a) $H_0: p = 0.8$ (null hypothesis)
 $H_1: p \neq 0.8$ (alternative hypothesis) X
 $H_0: p = 0.8, B(20, 0.8)$ is the null distribution

$$p(0) = 1.05E-14$$

$$p(1) = 8.4E-13$$

$$p(2) = 3.2E-11$$

$$p(3) = 7.65E-10$$

$$p(4) = 1.3E-8$$

$$p(5) = 1.66E-7$$

$$p(6) = 1.66E-6$$

$$p(7) = 1.33E-5$$

$$p(8) = 8.66E-5 \approx 0.0001$$

$$p(9) = 4.62E-4 \approx 0.0005$$

$$p(10) = 2.03E-3 \approx 0.0020$$

$$p(11) = 7.4E-3 \approx 0.0074$$

$$p(12) = 0.02216$$

$$p(13) = 0.05455$$

$$p(14) = 0.1091$$

$$p(15) = 0.1746$$

$$p(16) = 0.2182$$

$$p(17) = 0.2054$$

$$p(18) = 0.1369$$

$$p(19) = 0.0576$$

$$p(20) = 0.0115$$

The intended size of the rejection region is 0.05. From the probability distribution above $p(X \leq 12) = 0.0322$, $p(X \leq 13) = 0.0867$. 0.0322 is closer to 0.05, so let this be the significance probability (this will make no difference in the case as to whether the hypothesis $H_0: p = 0.8$ is accepted or rejected, since the observation