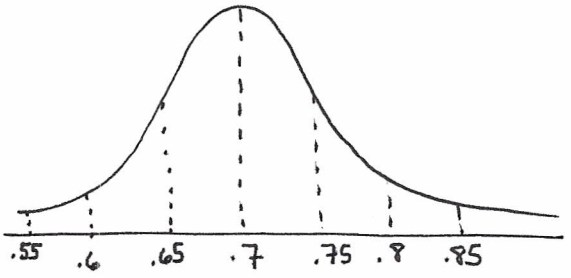
Chapter 9 Review Problems

1. $p = .7$ $s = .0512$ $n = 80$

a)



b) RT1: population of drivers ≥ 800

RT2: $80(.7) \geq 10$ and $80(.3) \geq 10$

Yes, conditions are met

2. a) $p = .07$ $n = 200$ $s = .0180$

$N(.07, .0180)$

b) RT1: population of people who receive loans ≥ 2000

RT2: $200(.07) \geq 10$ and $200(.93) \geq 10$

Yes, conditions are met.

c) $P(\hat{p} \geq .1) = P(z \geq 1.67) = .0478$

$$z = \frac{.1 - .07}{.0180}$$

$z = 1.67$

3. $p = .3$ $n = 100$ $s = .0458$

a) $N(.3, .0458)$

RT1: population of students ≥ 1000

RT2: $100(.3) \geq 10$ and $100(.7) \geq 10$

b) $P(\hat{p} \geq \frac{1}{3}) = P(z \geq .73) = .2334$

$$z = \frac{\frac{1}{3} - .3}{.0458}$$

$$z = .73$$

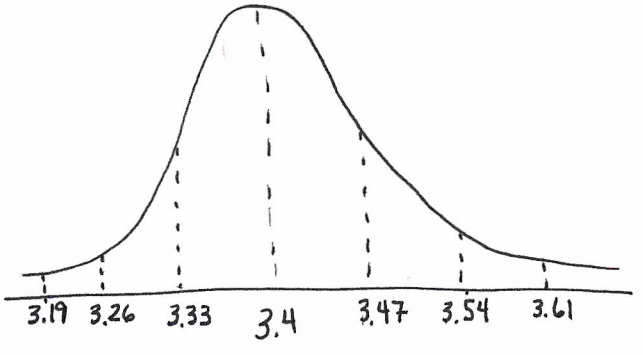
4. $p = .04$ $n = 732$ $s = .0072$

$$P(\hat{p} \geq \frac{20}{732}) = P(z \geq -1.76) = .9608$$

$$z = \frac{\frac{20}{732} - .04}{.0072}$$

$$z = -1.76$$

5. $N(3.4, .07)$



6. a) Using the Central Limit Theorem,
$N(2.9, .0447)$

b) $P(3.0 \leq \bar{y} \leq 3.1) = P(2.24 \leq Z \leq 4.47) = .0125$

$z = \frac{3.0 - 2.9}{.0447}$ $\quad$ $z = \frac{3.1 - 2.9}{.0447}$

$z = 2.24$ $\quad$ $z = 4.47$

c) invNorm $(.95) = 1.64$

$1.64 = \frac{\bar{y} - 2.9}{.0447}$

$2.97 = \bar{y}$

7. a) We do not know the type of distribution for a single party.

b) $N(9.6, 2.7)$

$P(\bar{x} \geq 15) = P(z \geq 2) = .0228$

$z = \frac{15 - 9.6}{2.7} = 2$

c) $N(9.6, 1.7)$

$P(\bar{x} \geq 15) = P(z \geq 3.18) = .0007$

$z = \frac{15 - 9.6}{1.7}$

$z = 3.18$

It is unlikely due to the small probability.

8. $N(9.6, .8538)$

a) $P(\bar{x} \geq \frac{500}{40}) = P(z \geq 3.40) = .0003$

$$z = \frac{\frac{500}{40} - 9.6}{.8538}$$

$$z = 3.40$$

b) $\text{invNorm}(.9) = 1.28$

$$1.28 = \frac{\bar{x} - 9.6}{.8538}$$

$$\$10.69 = \bar{x}$$

9a) $N(130, 8)$

$P(\bar{x} \geq 125) = P(z \geq -.625) = .7340$

$z = \frac{125-130}{8} = -.625$

b) $N(130-120, \sqrt{8^2+10^2})$

$N(10, 12.8)$

c) $P(\bar{x}_E - \bar{x}_W \geq 5) = P(z \geq -.39) = .6517$

$$z = \frac{5-10}{12.8} = -.39$$

d) $s = \frac{12.8}{\sqrt{10}} = 4.05$

e) $P(\bar{x}_E - \bar{x}_W \geq 5) = P(z \geq -1.23) = .8907$

$z = \frac{5-10}{4.05} = -1.23$