1. (a) 0.3710934

   #R:

   sigma<- 0.5/sqrt(5)

   pnorm(1.8, 2, sigma)*2

   #Excel:=NORM.DIST(1.8,2,0.5/(5^0.5),TRUE)*2

   (b) 7.744216e-06

   #R:

   sigma<- 0.1/sqrt(5)

   pnorm(1.8, 2, sigma)*2

   #Excel:=NORM.DIST(1.8,2,0.1/(5^0.5),TRUE)*2

   (c) 0.4884223

   #R:

   sigma<- 0.5/sqrt(3)

   pnorm(1.8, 2, sigma)*2

   #Excel: =NORM.DIST(1.8,2,0.5/(3^0.5),TRUE)*2

   (d) 0.0005320055

   #R:

   sigma<- 0.1/sqrt(3)

   pnorm(1.8, 2, sigma)*2

   #Excel:=NORM.DIST(1.8,2,0.1/(3^0.5),TRUE)*2

2. (a)It depends, because we do not know the distribution of the population, and the sample size is not greater than or equal to 30.

   (b) 0.0668072

   #R:

   sigma<- 0.6/sqrt(9)

   pnorm(5.7, 6, sigma)

   #Excel:=NORM.DIST(5.7,6,0.6/(9^0.5),TRUE)

   (c) 1

   #R:

   sigma<- 0.6/sqrt(9)

   pnorm(7.4, 6, sigma)

   #Excel:=NORM.DIST(7.4,6,0.6/(9^0.5),TRUE)

   (d) 6.328971

   #R:qnorm(0.95, 6, sigma)

   #Excel:=NORM.INV(1-0.05, 6, 0.6/(9^0.5))

3. (a) True.

   #Since asample is randomly chosen, the confidence interval will also be random.

   (b) False.

   #When sample size goes up, the t distribution approaches the standard normal distribution. And as it becomes more centralized, the confidence interval becomes smaller.

   (c) True.

   (d) False. #See the last pagein the slides for week 8.

   (e) True.