1) Given n=1025
   Percentage who support same sex marriage=61%
   To find 95% confidence interval, 1-alpha=0.95
   Hence alpha=0.05
   Qnorm (1-(0.05)/2) = qnorm(0.975)
   N=1025, p=0.61
   > p-q*(sqrt(p*(1-p)/N))

   [1] 0.580140

   p+q*(sqrt(p*(1-p)/N))

   [1] 0.6398596

   The 95% confidence interval is between 58% and 64%.

2) We can write our null hypothesis to be
   H0 : μ = 0 and **H1** : : μ != 0
   t = xbar−μ s/sqrt (n) = = −0.1833 5.18633/ sqrt(60) = -0.2737
   And since it's a 2 tailed test, we need to multiply by 2
   2*pnorm(-abs(-0.2737))

   [1] 0.7843152

   0.7843152 > 0.5

   Hence **H0** Stands, we do not reject the null hypothesis **H0**

3) We can consider 0.95 as the success probability of a Bernoulli trial, either the interval contains 0.5 (success) or not (failure).
   The 600 intervals constitute 600 independent Bernoulli trials and if V is the number of successes in these 600 trials (i.e., the number of intervals containing 0.5)

   = 600 * 0.95
   = 570.
   Hence the answer is **TRUE**

4) q = qnorm(1-0.01/2)
   > q

   [1] 2.575829

   n = (2qσ/L) ^ 2

   given L = 2, σ = 6 and q = 2.575

   n = 238.85 or 239

5) (a) if P represents he get it right then H0 : p <= 0.2 and H1 : P > 0.2

(b) 1 - pbinom(24, 100 , 0.2)

[1] 0.1313532
= 13.13 %

(c) No, 13% is not a small enough value to justify the powers beyond doubt.

6) Let's write our hypothesis to be

H0 : The score change is positive and **H1** : Score change is negative

a) T = xbar-μ / s*sqrt(n)

T= 6.5-0/12*sqrt(61) = 0.0693

> 2*pnorm(-abs(0.0693))

[1] 0.9447508

(b) we choose alpha to be 0.10 and 0.94 > 0.10 hence the null hypothesis H0 holds and study provides convincing evidence that live reggae music improves students' math test scores.