HW 2

A random sample of 18 2-year-old girls is drawn from a child care center, and their heights are measured: 44.1 38.6 38.2 27.2 21.1 53.8 28.0 41.8 23.6 39.2 42.6 36.5 29.5 28.3 25.9 52.9 19.1 29.2

1) Assume the heights in the population of 2 year old girls are normally distributed with unknown mean μ and known standard deviation 10 inches. Suppose your prior distribution for μ is normal with mean 30 and standard deviation 6.
   a) Get the posterior distribution for μ.
   b) Get the posterior mean, variance, sd, 5th and 95th percentile for μ.

2) Assume the heights in the population of 2 year old girls are normally distributed with known mean μ=32 inches and unknown variance σ^2. Suppose your prior distribution for σ^2 is inverse gamma(2,20).
   a) Get the posterior distribution for σ^2.
   b) Get the posterior mean, variance, sd, 5th and 95th percentile for σ^2.

Use exact values, not Monte Carlo approximation.