1. Work problem 2.5 on page 71 of the textbook. Do not replace any transcendental constant with a decimal. For example “$\log_2 3$” should be left as is, but “$\log_2 4$” should be written as 2.

(a) $T(n) = 2T(n/3) + 1$

(b) $T(n) = 5T(n/4) + n$

(c) $T(n) = 7T(n/7) + n$

(d) $T(n) = 9T(n/3) + n^2$

(e) $T(n) = 8T(n/2) + n^3$

(f) $T(n) = 49T(n/25) + n^{3/2} \log n$

(g) $T(n) = T(n - 1) + 2$

(h) $T(n) = T(n - 1) + n^c$ where $c \geq 1$ is a constant.

(i) $T(n) = T(n - 1) + e^n$ where $c > 1$ is a constant.

(j) $T(n) = 2T(n - 1) + 1$ Work this one my substitution. Let $n = \log_2 m$, and let $F(m) = T(2^n)$. Substituting, we have $F(m) = 2F(m/2) + 1$.

(k) $T(n) = T(\sqrt{n}) + 1$ Use substitution: $m = \log_2 n$. 
2. Work problem 2.4 on page 71 of the textbook.

3. Problem 2.12 on page 23 of the textbook.