

**Assignment 7, Discrete Math**  
**Covers sections 5.3, 8.1, 8.2**

1. 5.3 #11(b)
2. 5.3 #15(b)  
(note  $a_n = 4a_{n-1} + 0 \cdot a_{n-2}$ ; guess  $p_n = (an + b)2^n$  for the particular solution)
3. 8.1 #9
4. 8.1 #16
5. 8.1 #17(b)(d) (Horner's Algorithm only)
6. 8.2 #7(b)(f)
7. 8.2 #12
8. 8.2 #17
9. Using Prop. 8.2.6 and L'Hôpital's Rule (or some other means), show that  $f \prec g$ ,  $g \prec f$ , or  $f \asymp g$  in each case.
  - (a)  $f(n) = 2^n$      $g(n) = n^3$
  - (b)  $f(n) = (\ln n)^2$      $g(n) = n^{1/2}$
  - (c)  $f(n) = n! + 15n^n$      $g(n) = n^n$
10. 8.2 #19(a)(b)