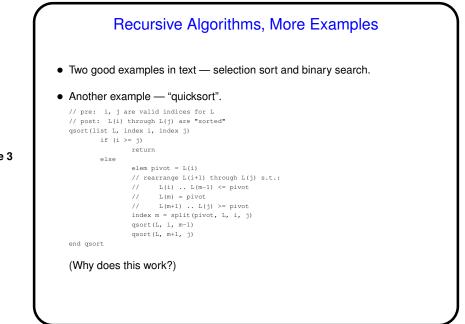
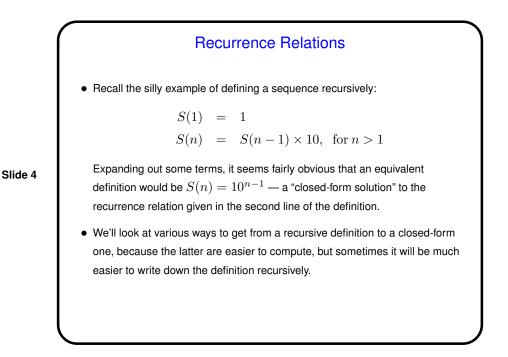
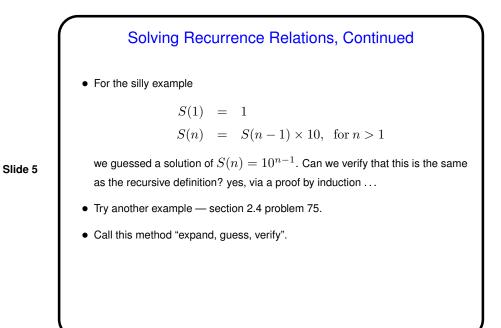


Slide 2



Slide 3





Solving Recurrence Relations, Continued

- Is there another way? In general, probably not, but there are some formulas for some frequently-occurring special cases.
- One is "first-order linear" recurrence relations. If

then we can show (see textbook for derivation) that

$$S(n) = cS(n-1) + g(n)$$

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$$S(n) = c^{n-1}S(1) + \sum_{i=2}^{n} (c^{n-i}g(i))$$

• Apply this to the two problems we did earlier — we should get the same results.

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Minute Essay

• Consider the following recursive definition of a sequence:

S(1) = 1S(n) = 10S(n-1) + 1, for n > 1

What are S(1), S(2), ..., S(5)?

Minute Essay Answer • The first few terms: S(1) = 1 S(2) = 11 S(3) = 111 S(4) = 1111S(5) = 11111