Daily Question

Reading for September 30: Kozen chapter 13. This material isn't covered in Sipser. I'll bring 10 copies of the chapter to class on Sept. 28 for those who need it.

(due September 30, 2004) (a slightly altered version of Kozen HW4, Q3):

Let $M = (Q, \{\mathtt{a}, \mathtt{b}\}, \delta, q_1, \{q_2, q_3, q_6\})$ be a DFA with

$$
\begin{aligned}
Q &= \{q_1, q_2, q_3, q_3, q_4, q_6, q_7, q_8\} \\
\end{aligned}
$$

$\delta(q_1, \mathtt{a})$	$=$	$q_1,$	$\delta(q_1, \mathtt{b})$	$=$	$q_2,$
$\delta(q_2, \mathtt{a})$	$=$	$q_3,$	$\delta(q_2, \mathtt{b})$	$=$	$q_4,$
$\delta(q_3, \mathtt{a})$	$=$	$q_2,$	$\delta(q_3, \mathtt{b})$	$=$	$q_5,$
$\delta(q_4, \mathtt{a})$	$=$	$q_3,$	$\delta(q_4, \mathtt{b})$	$=$	$q_1,$
$\delta(q_5, \mathtt{a})$	$=$	$q_2,$	$\delta(q_5, \mathtt{b})$	$=$	$q_8,$
$\delta(q_6, \mathtt{a})$	$=$	$q_7,$	$\delta(q_6, \mathtt{b})$	$=$	$q_4,$
$\delta(q_7, \mathtt{a})$	$=$	$q_3,$	$\delta(q_7, \mathtt{b})$	$=$	$q_6,$
$\delta(q_8, \mathtt{a})$	$=$	$q_8,$	$\delta(q_8, \mathtt{b})$	$=$	q_2

1. Determine which states are accessible and which are not.

2. List the equivalence classes of the collapsing relation $\approx$ defined in Kozen lecture 13:

$$
p \approx q \quad \overset{\text{def}}{\Longleftrightarrow} \quad \forall x \in \Sigma^*.\ (\hat{\delta}(p, x) \in F \Leftrightarrow \hat{\delta}(q, x) \in F)
$$