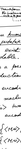
REDUCTIONS

If reduce Q to Q' means
if I can solve Q, I can solve Q'
If Q is "harder than" Q'
$Q \geq Q'$

Example



If you have a parabolic mirror to focus the parabolic sound waves, a Q can be constructed.

K is a parabolic mirror
P reduction $\rightarrow$ to Q where

$\{\langle x\rangle\}$ accepting $\leq$ $\{\langle x\rangle\}$
$\{\langle x\rangle\}$ rejection $\leq$ $\{\langle x\rangle\}$
$\{\langle x\rangle\}$ $\leq$ $\{\langle x\rangle\}$
$\{\langle x\rangle\}$ accepting $\leq$ $\{\langle x\rangle\}$

$H_{TM} = \{\langle M\rangle\langle w\rangle \mid M \text{ halts on } w\}$
$A_{TM} = \{\langle M\rangle\langle w\rangle \mid M \text{ accepts } w\}$

$H_{TM} \leq A_{TM}$

Alg for Hm cannot exist

$A_{TM} \leq H_{TM}$

Alg for Am
Alg for Hm
Machine
Q
Q
Q