

Practice Set: 5 TM

4.2.2. Present Turing machines that decide the following languages over $\{a, b\}$:

- (a) \emptyset
- (b) $\{e\}$
- (c) $\{a\}$
- (d) $\{a\}^*$

4.2.3. Give a Turing machine that semidecides the language a^*ba^*b .

- 4.2.4.** (a) Give an example of a Turing machine with one halting state that does not compute a function from strings to strings.
- (b) Give an example of a Turing machine with two halting states, y and n , that does not decide a language.
- (c) Can you give an example of a Turing machine with one halting state that does not *semidecide* a language?