

- (17) $L = \{w c w^R \mid w \in \Sigma^*\}$ is not RL
 (18) $L = \{w c w \mid w \in \Sigma^*\}$ " " "
 (19) $L = \{w c w^R \mid w \in \Sigma^+\}$ " " "
 (20) $L = \{w c w \mid w \in \Sigma^+\}$ " " "
 (21) $L = \{w w \mid w \in \Sigma^*\}$ " " "
 (22) $L = \{w w^R \mid w \in \Sigma^+\}$ " " "
 (23) $L = \{w c w^R \mid w \in \Sigma^+\}$ " RL
 (24) $L = \{c w w^R \mid c, w \in \Sigma^*\}$ " RL
 (25) $L = \{w w^R c \mid c, w \in \Sigma^*\}$ " RL

(17) $\frac{a b b}{w} \quad c \quad \frac{b b a}{w^R}$

(23) $w = a b b \quad w^R = b b a$
 $c = a a$

(18) $\frac{a a b c}{w} \quad \uparrow \quad \frac{a a b}{w}$

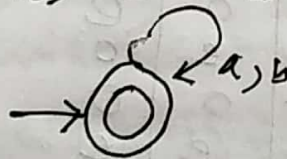
$\frac{a b b}{w} \quad \frac{a a}{c} \quad \frac{b b a}{w^R}$

(21) $\frac{a b b}{w} \quad \frac{a b b}{w}$

w must be very short s. as
 $w = \epsilon$

(22) $\frac{a b b}{w} \quad \frac{b b a}{w^R}$

w^R must be very short
 s. as $w^R = \epsilon$



(24) $\frac{a a}{c} \quad \frac{a b b}{w} \quad \frac{b b a}{w^R}$

(25) $\frac{a b b}{w} \quad \frac{b b a}{w} \quad \frac{a a}{c}$

(26) $L = \{wcw^R \mid c, w \in \Sigma^+\}$ is RL

(27) $L = \{c, ww^R \mid c, w \in \Sigma^+\}$ is not RL

(28) $L = \{ww^Rc \mid c, w \in \Sigma^+\}$ is not RL

(29) $L = \{wcw \mid c, w \in \Sigma^*\}$ is RL

(30) $L = \{cw^Rw \mid c, w \in \Sigma^*\}$ is RL

(31) $L = \{wwc \mid c, w \in \Sigma^*\}$ is RL

(32) $L = \{wcw^R \mid c, w \in \Sigma^+\}$ is not RL

(33) $L = \{cw^Rw \mid c, w \in \Sigma^+\}$ is not RL

(34) $L = \{wwc \mid c, w \in \Sigma^+\}$ is not RL

(26) $\frac{a}{w} \quad \frac{abb}{c} \quad \frac{a}{w^R}$

(27) $\frac{abb}{c} \quad \frac{a}{w} \quad \frac{a}{w^R}$

(32) $\underline{a} \ b \ b \quad a \ \underline{a} \ b \ b$