

#	$\eta \downarrow e$	$\eta \downarrow 12 \eta$	$\eta' \downarrow$	$\eta' \downarrow e \downarrow$	$\eta \downarrow 12 \eta$	$\eta' \downarrow$
1	$a^h b^h c^h$	X	X	$\overline{a^h b^h c^h}$	X	✓
2	44	X	X	$\overline{44}$	X	✓
3	a^p	X	x	$\overline{a^p}$	X	X
4	$a^{h!}$	X	x	$\overline{a^{h!}}$	X	X
5	a^{2^i}	X	x	$\overline{a^{2^i}}$	X	X
6	a^{h^2}	X	x	$\overline{a^{h^2}}$	X	X
7	ww^{12}	X	✓	$\overline{ww^{12}}$	X	✓
8	$a^h b^h$	X	✓	$\overline{a^h b^h}$	X	✓
9	$a^i b^h c^k$ $i = h+k$	X	✓	$\overline{a^i b^h c^k}$ $i = h+k$	X	✓
10	$a^h b^h c^i \wedge a^k b^t c^t =$ $a^h b^h c^h$	X	X	$\overline{a^h b^h c^h}$	X	✓

#	$\lambda \cup \rho$	$\gamma \delta (2\gamma)$	$\gamma' \delta'$	$\overline{\gamma' \delta' \rho \gamma}$	$\gamma \delta (2\gamma)$	$\gamma' \delta'$
71	$a^h b^m c^m d^h$	X	✓	$\overline{a^h b^m c^m d^h}$	X	✓
72	$a^h b^m c^h d^m$	X	X	$\overline{a^h b^m c^h d^m}$	X	X
73	$a^h b^h \cup a^*$	X	✓	$\overline{a^h b^h \cup a^*}$	X	✓
74	$a^h b^h \cup (a^h)^*$	X	✓	$\overline{a^h b^h \cup (a^h)^*}$	X	✓
75	$a^h b^h c^k$ $h > k$	X	X	$\overline{a^h b^h c^k}$ $h > k$	X	✓
76	$a^h b^h \cup a^{*h}$	✓	✓	$\overline{a^h b^h \cup a^{*h}}$	✓	✓
77	$a^p a^q = a^{p+q}$ $p, q \geq 2$ a^{2h} $h \geq 3$	✓	✓	$\overline{a^{2h}}$ $h \geq 3$	✓	✓
78	$a^h b^p$	X	X	$\overline{a^h b^p}$	X	X
79	$a^p b^q$	X	X	$\overline{a^p b^q}$	X	X
20	$H_a(w) = H_b(w)$	X	✓	$\overline{H_a(w) = H_b(w)}$	X	✓

#	\mathcal{L}	' \mathcal{L}	\mathcal{L}'	$\overline{\mathcal{L}}$	' \mathcal{L}	\mathcal{L}'
21	$a^i b^k c^t \mid i \leq k+t$	X	✓	$\overline{a^i b^k c^t \mid i \leq k+t}$	X	✓
22	$a^h b^{k^2}$	X	X	$\overline{a^h b^{k^2}}$	X	X
23	$a^i b^j c^k \mid i=j=k \text{ or } i>50$	✓	✓	$\overline{a^i b^j c^k \mid i=j=k \text{ or } i>50}$	✓	✓
24	$a^h b^m c^k \mid (h+m) \bmod 3 = k \bmod 3$	✓	✓	$\overline{a^h b^m c^k \mid (h+m) \bmod 3 = k \bmod 3}$	✓	✓
25	$L = \{xyz \mid x,y,z \in \{a,b\}^* \text{ And } x \leq y \leq z \}$ since $x=y=e, z=e^*$	✓	✓	$\overline{L = \{xyz \mid x,y,z \in \{a,b\}^* \text{ And } x \leq y \leq z \}}$	✓	✓
26	$(ab)^h a(ba)^{2h}$	✓	✓	$\overline{(ab)^h a(ba)^{2h}}$	✓	✓
27						
28						
29						
30						

$$20) H_n(w) = H_n(w) \quad S \rightarrow aSb \mid bSa \mid SS \mid \epsilon$$

$$21) a^i b^k c^z \mid i \leq k + z \quad \begin{aligned} S &\rightarrow aSc \mid Sc \mid Xc \mid Y \\ X &\rightarrow aXb \mid Xb \mid \epsilon \\ Y &\rightarrow aYb \mid Yb \mid b \end{aligned}$$

$$26) (ab)^n a(ba)^{2n} \quad (a \leq a \leq a \leq a)^* a$$