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"&2'>! P&'92=N! 2=! U#T! V#&&=I!5<=4'21E4#K! 4<! /7W! <P! U#T! V#&&=I XK! 4<4&M N'##=6<EK#! N&K! #92KK2<=KC!Q=YP&'9!O'&5425#K!&=I!9#46<IK!P&'9#'K!&'#!EK2=N)!'##&K#!&!&CE4!<P!5&'1<=! I 2<D2I #!Z\$Q![!&=I!9#46&=#!Z\$M<sup>.</sup>[!&=I!=24'<EK!<D2I #!ZU!Q[!#92KK2<=K!T6256!&'#!O<4#=4!5&'1<=! I 2<D2I #!#\E2F&##=4K!Z\$Q!#[C!?6#K#!#92KK2<=K!=##I!4<!1#!%<T#'#I!K2N=2P25&=4%!4<!9##4!46#! <1%2N&42<=K!<P!46#!3&'2K!SN'##9#=4!P<'!U#T!V#&&=I!4<!6&F#!=#4Y]#'<!5&'1<=!#92KK2<=K!1>!/B7BC!

O'<E0!\*\*!EK#I!4T<!\E&%4&42F#!'#K#&'56!9#46<IK^!%4#'&4E'#!&=I!5&K#!K4EI2#K)!4<!#D0%<'#!%TY 5&'1<=!9#46<IK!T6#'#2=!''2!RE5&K!9&>!&II!4<!H=4#N'&4#I!L&'9!3%&=K!ZHL3K[G!''&4&!T&K!'#4'2#F#I! P'<9!P<E'!U#T!V#&%&=I!P&'9K!1&K#I!2=!P<E'!'#N2<=K^!M&T(#K!\_&>)!\_&>!<P!3##=4>)!\$&=4#'1E'>)!&=I! Q4&N<6!!

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!"#\$%&' ()\*\*)#+\*&

 $\begin{aligned} \mathsf{S4!\&=!<=YP\&' 9!\%F\#\$!...W!<\mathsf{P!}\$M.!O'<\mathsf{IE542<=!2K!\#=4\#'25\&\%\!\!>!9\&\mathsf{I}\#!\&=\mathsf{I}!*W!2K!P'<9!5<\mathsf{T!9\&=E'\#!\&=\mathsf{I}!}\\ \#\mathsf{PP\%E\#=4!ZR\#\mathsf{IN\&'1!a!L\&\%<=\#')!/B*7[G!S55<'\mathsf{I2=N!4<!}3ONJ5!Z/B*.[)!\#=4\#'25!\$M.!P'<9!\%FK4<5(!I2N\#K42F\#!K>K4\#9K!2K!46\#!9<K4!K2N=2P25&=4!N&K!P<'!46\#!&N'25E%E'&\%5<=4'21E42<=!ZA*GAW[!&=\mathsf{I}!T&'92=N!\#\mathsf{PP}\#54G!J\#KE\%K!<\mathsf{I4&2=}\#\mathsf{IP'}<9!46\#!\%AE'\#!'\#F2\#\mathsf{T}!\mathsf{I}\#=4\#'25!&\%''!&=\mathsf{I}!#'*\mathsf{I}!*F2}\\ \mathsf{EK\#I}!4<!K2N=2P25&=4\%!'*\mathsf{IE5\#!}\#=4\#'25&\%\mathsf{I}!\#=\mathsf{I}#'*\mathsf{I}!\$M.!2=!5&44\%G!?6\#K\#!&'\#!\%<\mathsf{T!1}'#\#\mathsf{I2=N!4\#56=2}E\#K!\\ &=\mathsf{I}!290\%9\#=42=N!&=42Y9\#46&=<N\#=25!F&552=&42<=K!Z325(\#'2=N!\#4!&\%)!/B*7g!$6#\%&O&=\mathsf{I2!}\#4!&\%)!\\ \mathsf{/B*-[G!!}\end{aligned}$ 

S = <46#'! 9242N&42 <= !9#46 < I!P <'!#=4#'25!P#'9#=4&42 <= !2K!46#!EK#! <P!9#46& = <N#=25!F&552=&42 <=KG!?6#K#!&'#!1#5 < 92 = N!9 <'#!0E1%52K#I!P <'!%F#K4 < 5(!P&'92 = N)!&K!46#K#!F&552 = #K!6&F#!K6 < T = !4 <!1#!0' < 92K2 = N!P <'!K6#0! 5<=1 E54#1!2=!46#! b&2(&4<! '#N2<=)!462K! K4'&4#N>!5&=!1#!290#9#=4#1!2=!<46#'!'#N2<=K! | E#!4<! K292% '!P&'9!K>K4#9KG!

H=!4#'9K!<P!2=4#'F2#TK)!24!T&K!P<E=1!46&4!46#'#!&'#!F&'2<EK!%TY5&'1<=!K4<5(!P##1!<O42<=K!46&4! P&'9#'K!&'#!5E''#=4%!EK2=NG!QP!46#K#)!46#!<=%!F2&1#!&OO'<&56!46&4!&11'#KK#1!46#!N%<1&%T&'92=N! &=1!5%9&4#!56&=N#!5'2K2K!T&K!'#N#=#'&42F#!&N'25E%E'#!ZJ#N#=#'&42F#!SN'25E%E'#!H=242&42F#!a!?6#!

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$$\begin{split} & 8\&2 = !<= !P\&' 9!\&Q_{!}\#92KK2 <= K!5 < 9\#!P' < 9!\#=\#'N > !EK\#!KE56!\&K!#\#54'2524 >)!12\#K#\%!\&=1!0#4' < \%ZM&92\%\\ a1; 4\#06\#=K <= )!/B/B[G!8\&562=\#' > !EK&N\#!2=!U\#T!V\#\&\%\&=1!1&2' > !P\&'9K!2K! <= \#! < P!46\#!\%'N * K4!#=\#'N > Y\\ & 5 <= KE92 = N!&542F242\#K!Z'' #T!#4!&\%)!/B/*g!!\% & K!#4!&\%)!/B/B[G!?62K!2K!1E#!4<!46#!EK#!<P!=<=Y'#=#T&1\#!!\\ & #=\#'N > '!P < KK2\%PE#\%)!2=!46#!P<'9!<P!0#4' < \%&=1!12#K#\%ZH\% & K!#4!&\%)!/B' . [G!M#=5#)!9&562=#'>!'##KK<52&4#1!T246!\\ & K2N=2P25&=4!5&'1 <= !#92KK2 <= K!2=4 < !46\#!&49 < KO6\#'#G!M < T#F#')!#92KK2 <= K!46&4!&'#!&KK < 52&4#1!T246!\\ & #=\#'N > !EK\#! <= YP&'9!&'#!5 <= K21#'#1!d\% < T#K4!6&=N2=N!P'E24)X!T6256!2=125&4#K!46&4!#92KK2 <= K!5&=!1#!\\ & K2N=2P25&=4\%!'#1E5\#1!1>!290\%#9#=42=N!\% <TY5&'1 <= !#92442=N!O<4#=42&\%K4'&4#N2#K!ZM&92\%a a!\\ & ;4\#O6\#=K <= )!/B/B[G!! \end{split}$$

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&'#! =<! %<=N#'! #D5#KK2F#! &9<E=4K! 5<=4'21E42=N! 4<! | #=24'2P25&42<=6! `#'>! <55&K2<=&%>! 2=! O<<'! N'<T2=N!K#&K<=K)!62N6!=24'<N#=!K#&T##| !P#'42%2K#'!2K!&OO%#| 6!; #&T##| !2K!&!N<<| !5&'1<=!K#\E#K4#'! &=I !2K!K&P#!P<'!5<TK!4<!5<=KE9#6!; 4#2=#'!=<425#| !&=!2=5'#&K#!<P!<46#'!5'<O!KO#52#K!&K!'>#N'&KK! O'<I E542<=!| #5'#&K#| !P<'!K2D!9<=46K!&P4#'!5#&K2=N!E'#&!&O0%5&42<=6!!

3%2=42=N! <P! 6#1 N#' <TK! <P! 0&%24&1%! K4<5(!KO#52#K! 6&K! &%K<! 1##=! &! K2N=2P25&=4!K4'&4#N>!4<!2=K#4! #92KK2<=K!&=1!0'<F21 #!KE00%#9#=4&'>!P##1!P<'!K4<5(!&=1!46#!5<99E=24>6!Q=!&F#'&N#)!46#'#!&'#! \*, !4'##K!O#'!6#54&'#)!T6256!2K!=#&'%!&4!=#4Y]#'<!#92KK2<=KG!QF#'&%)!; 4#2=#'!6&K!=<425#1!&!1'&K425! 2=5'#&K#!2=!T2%1 %P#!KE0O<'4#1!<=!62K!O'<O#'4>6!M#!6<O#K!4<!1#!5&'1<=!#E4'&%15#'42P2#1!2=!46#! PE4E'#G

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?62K! \*#K#&'56!P<E=I!&!F&'2#4>!<P!P#&K21%#!<042<=K!T6#'#1>!P&'9#'K!5&=!290%#9#=4!4<!\*#1E5#! 5&'1<=!#92KK2<=K!<=YP&'96!L&'9!9<1#%2=N!2K!&!N<<1!0%5#!P<'!9&=>!P&'9#'K!4<!K4&'4)!&K!24! 2I#=42P2#K!&'#&K!P<'!290'<F#9#=4!&=I!'#9<F#K!E=5#'4&2=42#K!<P!6<T!56&=N#!2=!0'&5425#K!9&>! 2=P%E#=5#!0'<1E542<=!2=!46#!PE4E'#6!H=5<'0<'&42=N!462K!2=4<!&!P&'9!0%&=!T2%0'<F21#!P&'9#'K!T246! 5%#&'!&542<=&1%#!4&'N#4K!46&4!'#P%#54!46#2'!P&'9!K>K4#9)!2=125&42=N!46#!290<'4&=5#!<P!RE5&KX!T<'(6! H=242&% %~T!5&'1<=!K4'&4#N2#K!K6<E%1!P<5EK!<=!K4<5(!#PP252#=5>!&=I!K4<5(!P##1!4<!'#1E5#!\$M'! #92KK2<=K6!R<T#'2=N!46#!&00%25&42<=!<P!=24'<N#=!P#'42%K#'!T2%1'#1E5#!#92KK2<=K)!T6256!5&=!1#! P&52%24&44#1!1>!K<T2=N!'#N#=#'&42F#!0&K4E'#K6!H==<F&42<=K!KE56!&K!&=42Y9#46&=<N#=25!F&552=#K!&=1! 12<12N#K4#'K!T2%A'#1E5#!#92KK2<=K!PE'46#'!2=!&'#&K!46&4!&'#!5E''#=4%!E=&44&2=&1%6!O'<E0!\*\*! 1#%#F#K!46&4!46#K#!9#46<1K!K6<E%1!1#!6#&F2%!2=F#K4#1!1>!1<46!46#!N<F#'=9#=4!&=1!<46#'! 5<<O#'&42F#!2=1EK4'2K6!H=K#442=N!K4'&4#N2KK!K6<E%1!1#

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b#!T<E%!%(#!4<!#DO'#KK!<E'!46&=(K!4<!<E'!5<99E=24>!0&'4=#')!''2!RE5&K)!<E'!KEO#'F2K<')!O#<'N2#! JE%#)!&=I!\_#=!;9246!<P!S%##56)!T6<!KE00<'4#I!<E'!0'<c#54!&=I!P&52%24&4#I!<E'!%#&'=2=N!T246! NE2I&=5#6!

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- L<T#')! '' 6)! \$>#)! 86)!; (21&)! h6)!; E44<=)! 86! S6)! \$&O#)! i6! U6)! J#2K)!; 6)!; 6#OO&' I )! R6! i6)! i#=(2=K)! S6)! O'2]]#442)!\_6)!O&‰<T&>)! i6!U6)!`24<EK#()!36)!R#&56)!S6)!\_<ET 9&=!S6!L6)!\_E44#'1&5(Y\_&6%)!@6)! ''#=4#=#')!L6!Z/B\*: [6!B; /)&7'6\$7)O(5%' &/O). 1.7/)(O)5; /)5K/O51E-(%''5). /O54%18!362%<K<O625&% ?'&=K&542<=K!<P!?6#!J<>&%; <52#4>!\_)!iE‰6!6440K^kkI <26<'Nk\*B6\*B. -k'K416/B\*: 6B\*, +!
- OE%#' >)!RG!Z/B/\*[G!<\$%: /%')54%0)5')5/.; 0'7'&1)5')#%'24./): '%/): (7P)K(5;)-/K/%).'K''G! $<u>6440K^kkTTTGK4EPP65<G=]k1EK2=#KKkP&'92=Nk1&2'>k*/, 7B7A, 7kP&'9#'KY4E'=Y4<Y</u>$ 4#56=<%N>Y4<Y0'<1E5#Y9<'<math>#Y92%YT246YP#T#'Y5<TK!
- $\begin{aligned} \mathsf{M} \& 92\%! \_ \texttt{G}!a!; 4\#06\#=\texttt{K}<=)!\mathsf{i} \texttt{G}!\texttt{Z}/\texttt{B}/\texttt{B}[\texttt{G}!\texttt{C}/24.(0\&)?\texttt{O}?'')' \texttt{O})-\$\%: \quad \texttt{'} \texttt{G}!\$\#=4'\#!\texttt{P}<'!; \texttt{E}\texttt{K}4\&2=\&12\%4>)! \\ \mathsf{h}=2\texttt{F}\#'\texttt{K}24>!<\texttt{P}!\texttt{Q}4\&\texttt{N}<\texttt{G}! \\ & \texttt{6}440\texttt{K} \end{aligned}$

<u>#92KK2<=KYP'<9YP&'9YK>K4#9KYT246Y2=5'#&K2=NYEK#Y<PYKEOO%#9#=4&'>YP##1KY&5'<KKY</u> 12PP#'#=4Y'#N2<=KY<PY=#TY]#&%=1!

$$\begin{split} \text{RE}(1) & = 1 \\ \text{RE}(1) \\ \text$$

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85b2%&9)!b6)!a!\_&%]&'<F&)!86!Z/B\*A[6)B; /)%'7/)'-)2\$(%1). ': #\$01)#'7(.(/")(0)"4##'%5)'-)-\$%: ) &%//0)(0-%\$"5%4.54%/)(0)5; /)\$6"/0./)'-)&'J/%0: /05)"5/K\$%2"; (#)#\$1: /05"6!R&=I!hK#! 3<%5>)!, -)!, A\*Y, -B6!<u>6440K^kk1<26<'Nk6440K^kk1<26<'Nk\*B6\*B\*, kc6%&=1 EK#0<%//>6/B\*A6B-GB:B</u>!! ?6<'0#)!SG!Z/BB. [G!, 05/%(.)-/%: /05\$5('0)\$02)%4: (0\$05)/%4.5\$5('0A)B; /)%'7/)\\$02). '05%'7b\*)'-) : /5; \$0/)(0)5; /).7(: \$5/).; \$0&/)2/6\$5/8!\$%9&425!\$6&=N#)!.:Z: [)!+BAY+: \*G! \_\_\_\_\_\_6440K^kkI <26<'Nk\*BG\*BBAkK\*B7-+YBB-Y.7B, YD!

`&=!82I I #%&')!\$6!C6)!\_#'#=4K#=)!36!\_6!86)!''2(K4'&)!i6)!a!''#!\_<#')!#6!i6!86!Z/B\*: [6!, J\$74\$5(' 0)' -)\$) -//2(0&)"5%\$5/&1)5')%/24./)&%//0; '4"/)&\$'')/: (""(' 0")-%': )2\$(%1)-\$%: (0&A)B; /)7/J/7)' -) \$0\$71"(''): \$55/%"8)SN'25E%E'&%; >K4#9K)!G`G)!. I //6! 6440K^kkI <26<'Nk\*B6\*B\*, kc6&NK>6/B\*: 6B76BB.!

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