Logical Dead End

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One is reduced to hysterical laughter to try to maintain a modicum of sanity.

Our Senate at work: Republican Mitch McConnell said (Dec 6) “Legislation that doesn’t include policy changes to secure our borders will not pass the Senate.”[1] Republican Trump said (Feb 3) the Senate should not pass legislation that includes border security.[2] Let P be the statement “Senate legislation should include border security.” and let Q be the statement “Senate should pass legislation.” Then we have the Republicans saying

$$(\sim P \Rightarrow \sim Q) \wedge (P \Rightarrow \sim Q)$$

Show that this is equivalent to **~Q**, that is, “The Senate should not pass legislation.”—basically stop working.

It looks like the Republicans in the House are doing the same thing.

politico.com[3]

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1 https://www.pbs.org/newshour/politics/senate-republicans-block-ukraine-and-israel-aid-as-they-demand-border-policy-changes

2 https://www.cnn.com/2024/02/10/politics/trump-foreign-aid-loan-senate-package/index.html

3 https://www.politico.com/dims4/default/78a7fc8/2147483647/resize/1160x%3E/quality/90/?url=https%3A%2F%2Fstatic.politico.com%2F61%2Faa%2F0a183944434ab65f7bb71082b684%2F2-dave-whamond-cagle-com.jpg

Solution

We want to show the following is true:

$$(\sim P \Rightarrow \sim Q) \wedge (P \Rightarrow \sim Q) \Leftrightarrow \sim Q$$

Via truth tables

((~	P	⇒	~	Q)	∧	(P	⇒	~	Q))	⇔	~	Q
F	T	T	F	T	F	T	F	F	T	T	F	T
F	T	T	T	F	T	T	T	T	F	T	T	F
T	F	F	F	T	F	F	T	F	T	T	F	T
T	F	T	T	F	T	F	T	T	F	T	T	F
(2)	(1)	(3)	(2)	(1)	(4)	(1)	(3)	(2)	(1)	(5)	(4)	(1)

Via propositional properties

$(\sim P \Rightarrow \sim Q) \wedge (P \Rightarrow \sim Q) \Leftrightarrow (P \vee \sim Q) \wedge (\sim P \vee \sim Q)$ (since $A \Rightarrow B \Leftrightarrow \sim A \vee B$)

$\Leftrightarrow (P \wedge \sim P) \vee \sim Q$ (propositional distributive law)

$\Leftrightarrow \sim Q$ ($P \wedge \sim P$ is a contradiction and always false)