Problems with vacuous truth:

- We’ve justified vacuous truth by saying “if we didn’t have vacuous truth, things would get really messed up” and that the result of using vacuous truth actually more closely matches our intuition.

- Vacuous truth doesn’t always completely match our intuition, however.

- Here are two examples where it’s uncomfortably strange

1. The following is a valid argument:

   \[ \neg p \]
   \[ . \quad p \rightarrow q \]

   Notice this is true no matter what \( q \) is. Let \( p = “Scott is at least 24 years old” \) and \( q = “Scott will give everyone in the class one million dollars” \). Since Scott isn’t quite 24 years old (\( \neg p \)), then we can logically conclude that “if Scott is 24 or older today, then he’ll give everyone one million dollars”. Something about this seems a bit uncomfortable, since if Scott was actually 24 today he certainly wouldn’t give anyone a million dollars. However, with vacuous truth it is correct.

2. Both of the following are true statements:

   Every president of the USA from colorado has had children
   Every president of the USA from colorado has not had children

   even though they seem to be contradictory. This is because no US president has ever been born in Colorado.