MAT137 - Calculus with proofs

- Assignment 1 is due on October 1.

- TODAY: Conditionals

- NEXT CLASS: Definitions and proofs
  - **Required videos: 1.10, 1.11, 1.12, 1.13**

Conditionals - True or False?

Let $x \in \mathbb{R}$.

1. $x > 0 \quad \Longrightarrow \quad x \geq 0$
2. $x \geq 0 \quad \Longrightarrow \quad x > 0$

3. IF $2 > 3$, THEN Alfonso is in love.

Hockey

Which of the following statements are equivalent to the statement *"Every Canadian man likes hockey"*?

1. If a man is Canadian, then he likes hockey.
2. If a man likes hockey, then he is Canadian.
3. If a man does not like hockey, then he is not Canadian.
4. If a man is not Canadian, then he does not like hockey.
5. Non-Canadian men do not like hockey.
6. If a Canadian does not like hockey, then she is not a man.

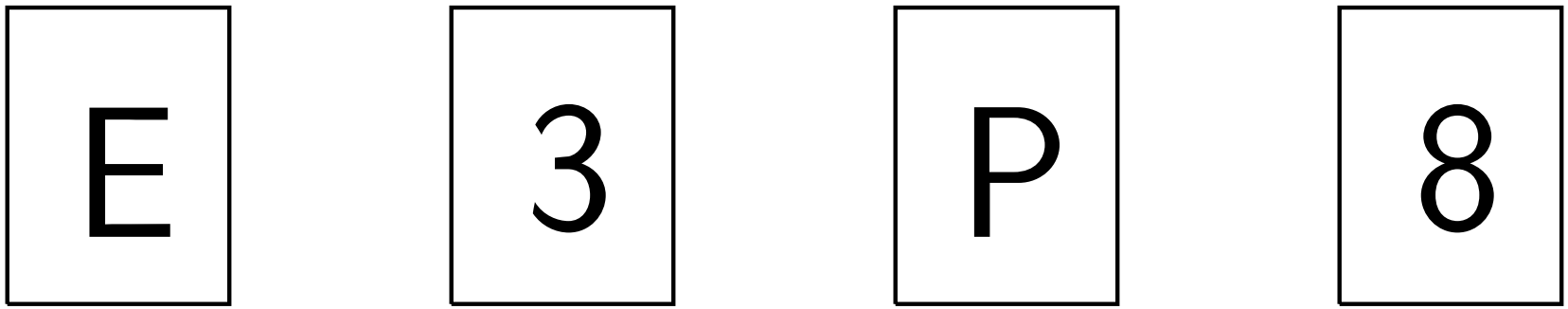
Negation - 2

Write the negation of these statements:

1. If Justin Trudeau has a brother, then he also has a sister.
2. If a student in this class has a brother, then they also have a sister.

Cards

Take a look at the following cards.



Each card has a letter on one side and a number on the other, and I tell you:

> "If *a card has a vowel on one side,*
> then *it has an odd number on the other side.*"

Which cards do you need to turn over in order to verify whether I am telling the truth or not?

Cards - 2

Four cards lie on the table in front of you. You know that each card has a letter on one side and a number on the other.

Negate the following statement:

"If *a card has a vowel on one side,*
then *it has an odd number on the other side.*"

Elephants

True or False?

1. There is a pink elephant in this room.

2. All elephants in this room are pink.

The teacher's cookies

- The teacher promised he would give a cookie to any kid who got 100 on the test.
- None of the kids got 100.
- The teacher did not give any cookie.
- Did the teacher lie or did he keep his word?

The teacher's cookies

- The teacher promised he would give a cookie to any kid who got 100 on the test.
- None of the kids got 100.
- The teacher did not give any cookie.
- Did the teacher lie or did he keep his word?

- Let $A = \{$ kids who got 100 $\}$
- Then $\boxed{\forall x \in A,\ x \text{ got a cookie}}$
- $A = \emptyset$.

Negation 3

Write the negation of this statement without using any negative words ("no", "not", "none", etc.):

> *"Every page in this book contains at least one word whose first and last letters both come alphabetically before M."*