Monday, Week 1

1. Discuss with your neighbor: which of the following statements strike you as true?
   (a) Ducks lay eggs.
   (b) Mammals lay eggs.
   (c) Mosquitoes carry the West Nile Virus.
   (d) Canadians are right-handed.

2. Fill in the following truth table:

   \[
   \begin{array}{c|c|c|c}
   a & b & a = b & a = -b & a = \pm b \\
   1 & 2 & & & \\
   3 & 3 & & & \\
   -1 & 1 & & & \\
   0 & 0 & & & \\
   \end{array}
   \]

3. What does \( \cos(3 \pm 1) = \cos(3) \cos(1) \mp \sin(3) \sin(1) \) mean?

4. Which of these statements mean the same thing?
   (a) If it is raining then I am happy.
   (b) If I am happy then it is raining.
   (c) If it is not raining then I am not happy.
   (d) If I am not happy then it is not raining.

5. How can you tell when a number is divisible by 25?

6. Write the truth table for “\( p \) and (\( q \) or \( r \))” and “(\( p \) and \( q \)) or \( r \)”. Come up with an English sentence that illustrates the difference between the two.