MATH 7: HANDOUT 0
REVIEW PROBLEMS

1. On the island of knights and knaves, you meet two inhabitants: Sue and Zippy. Sue says that Zippy is a knave. Zippy says, "I and Sue are knights." Who is a knight and who is a knave?

2. Solve the following equation:
$$6x^2 - (3x + 2)(2x - 2) - 4(x + 1) = 0$$

3. Solve the equation
$$|5x + 1| = 46$$

4. Imagine that from the regular card deck of 52 cards (4 suits, 13 cards per suit) you randomly choose 5 cards. What is the probability that all five cards are hearts $\heartsuit$?

5. In how many ways can one arrange 5 books on a shelf?

6. Simplify the following expression
$$\frac{(z^4 y)^3 \cdot z^{-2} y^2}{z^{-5} y^6}$$

7. Draw the graphs of the following functions:
   (a) $y = 2x - 1$
   (b) $y = |x| - 2$
   (c) $y = |2x - 4|$

8. Point M has coordinates $(5, 7)$.
   (a) Find coordinates of the point M_1 obtained from M by reflection around the x-axis
   (b) Find coordinates of the point M_2 obtained from M by reflection around the diagonal line.