All questions should be submitted by 4pm on Friday April 15th. Assignments can be submitted at your tutorial, or to the MATH1040/7040 assignment boxes (4th floor Priestley Building #67). **Make sure that your name, student number, tutorial group and your tutor's name are on each sheet of your answers.** You do not need a cover sheet nor do you need to include the question sheet. Solutions will be distributed in class later.

1. Answer each of the following questions, showing all working.

   (a) Find the distance between the points $(10, \sqrt{3})$ and $(-6, \sqrt{3})$.

   (b) Solve

   $$5y - 9x = -50$$
   $$-40y + 72x = 404$$

   (c) Solve

   $$-12 - 8y = -2x$$
   $$-5x = -214 + 3y$$

   (d) Find the domain of $f(w) = 3(w + 3)^2$.

   (e) Find the domain of $f(w) = \dfrac{7}{w^2 - 5}$.

   (f) Find the range of $f(w) = \sqrt{5\,|w|}$.

   (g) Find the range of $f(x) = \dfrac{-11}{\sqrt{x + 1}}$.

   (h) Find the domain and the range of $f(w) = \dfrac{9}{\sqrt{|w|}}$.

2. Given the quadratic equation $y = -2x^2 - 8x + 10$:

   (a) Find the roots of y.
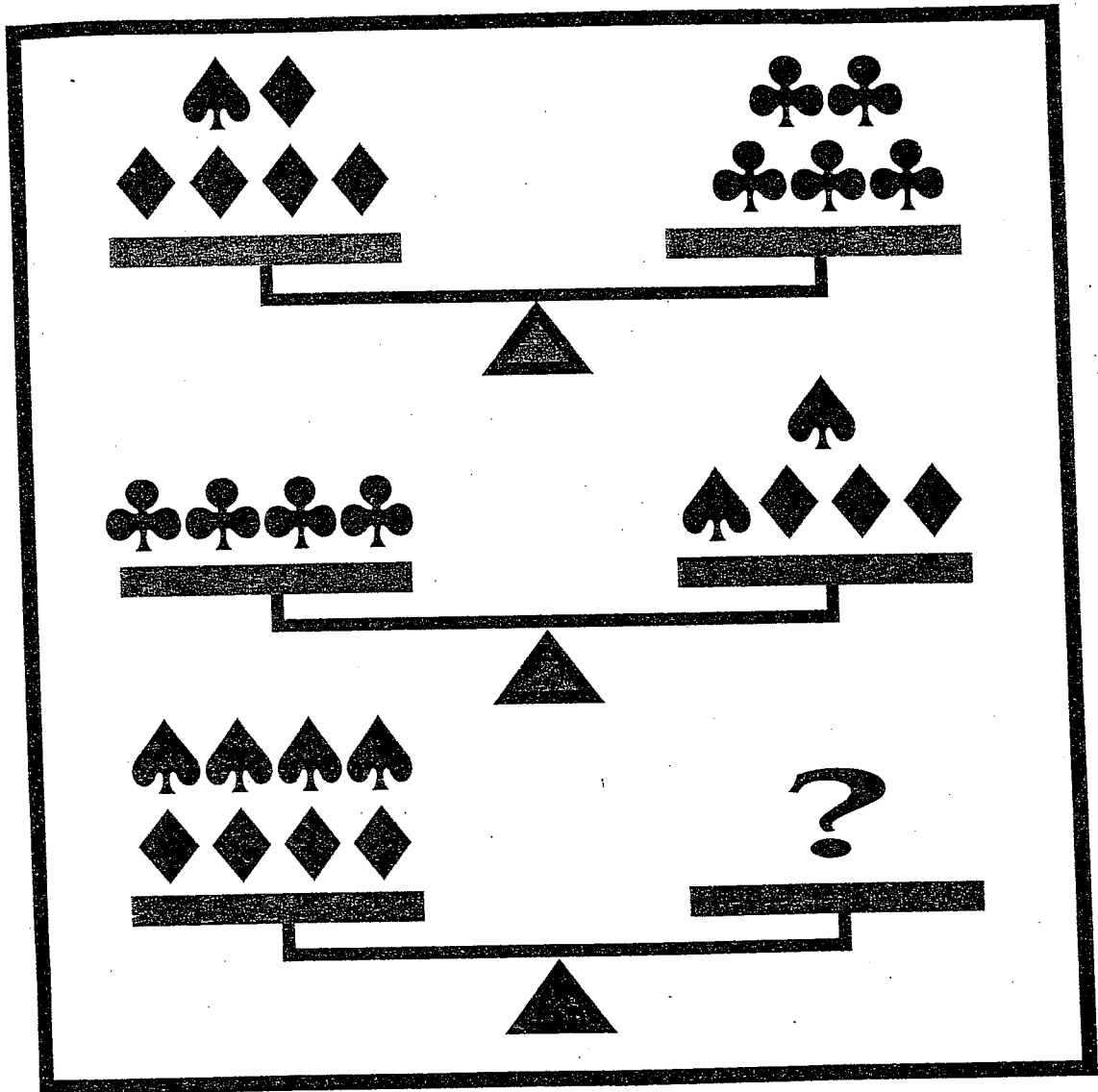
   (b) Find the y-intercept of the quadratic.

   (c) Sketch the graph of the quadratic.

3. Solve $8x^2 - 36 = -3x + 5x^2$.

4. BONUS QUESTION (4 marks)

The first two scales below are in perfect balance. How many clubs (on the right-hand side) will be needed to balance the third scale? Show all working.

Ensure your name, student number, tutorial number and tutor's name are on each sheet of your answers.

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