

**Question 1:**

(a)[5 points] Solve for  $w$ :

$$|2 - 11w| = 3$$

(b)[5 points] Solve for  $x$  and state your answer using interval notation:

$$\left| \frac{2 - 5x}{3} \right| \geq 5$$

**Question 2:**

(a)[5 points] Find both (i) the distance and (ii) midpoint between the points  $A(-1, 4)$  and  $B(3, -1)$ .

(b)[5 points] The point  $(a, a)$  is a distance 5 units from the point  $(3, -4)$ . Find all possible values of  $a$ .

**Question 3:**

(a)[5 points] Complete the square and state the centre and radius of the following circle:

$$x^2 + y^2 - 8x + 10y + 37 = 0$$

(b)[5 points] Give the equation of the circle with centre  $\left(\frac{1}{2}, \frac{-1}{2}\right)$  that passes through the point  $\left(2, \frac{3}{2}\right)$ .

**Question 4:** This question concerns the equation  $x = 2y^2 - 18$ .

(a)[4 points] Find the  $x$  and  $y$  intercepts of the graph of the equation.

(b)[6 points] Determine if the graph of the equation possesses symmetry with respect to the  $x$ -axis, the  $y$ -axis, or the origin.

**Question 5:**

(a)[5 points] Find the zeros of  $f(x) = 2(x - 3)^2 - 4$ .

(b)[5 points] Sketch the graph of  $f(x) = 2(x - 3)^2 - 4$  by applying transformations to one of the basic functions we saw in class. Show at least one point on your final graph, and also indicate the scale on the  $x$  and  $y$  axes.