Review on Quadratic and Linear Systems

Please answer the following questions in order using only the information you currently have. Write all formulas, show what you substitute into your formulas and clearly state your final answers. Remember to work downwards with only one equal sign per statement.

Question 1:
You are given the function $g(x) = 3(x - 10)^2 - 27$.
  a) What is the y-intercept?
  b) What is the zero(s) of the function?
  c) Does the graph open upward or downwards?
  d) Compared to the *"mother function"* is the parabola skinny, wide or the same size?
  e) State the interval where the function is:
      i)   Positive
      ii)   Negative
      iii) Increasing
      iv)   Decreasing
  f) Write the function in general form.
  g) Write the function in factored form.

Question 2:
You are given the function $h(x) = -4(x - 2)(x + 5)$.
  a) Write the function in general form.
  b) Write the function in standard form.

Question 3:
You are given the function $4x + 7y - 13 = 0$.
  a) What is the y-intercept?
  b) What is the x-intercept?
  c) State the interval where the function is:
      i)   Positive
      ii)   Negative
  d) Write the function in functional form.
  e) Write the function in symmetric form

Question 4:
  a) Find the solution to the following system of equations using the Elimination Method
$$3x - 4y = -26$$
$$5x - 3y = -25$$
  b) Find the solution to the following system of equations using the Comparison Method
$$y = 2x + 29$$
$$y = -5x - 20$$
  c) Find the solution to the following system of equations using the Substitution Method
$$x = y + 9$$
$$3y + 4x - 57 = 0$$

Question 5:

a) Find the point(s) of intersection of the following two functions.

$$f(x) = 3x^2 - 2x + 1$$
$$g(x) = -2x + 4$$

b) Find the point(s) of intersection of the following two functions.

$$h(x) = x^2 - 2x - 3$$
$$j(x) = 5$$

c) Find the point(s) of intersection of the following two functions.

$$r(x) = -x^2 + 6x - 5$$
$$q(x) = -2x + 7$$

d) Find the point(s) of intersection of the following two functions.

$$y = -\tfrac{1}{2}(x - 4)^2 + 18$$
$$x - y + 10 = 0$$

e) Find the point(s) of intersection of the following two functions.

$$y = x^2 + 10$$
$$y = 5x + 60$$

f) Find the point(s) of intersection of the following two functions.

$$y = \tfrac{1}{4}x^2 + 50$$
$$y = 10x - 25$$