1) Use elimination to solve the following simultaneous equations

\[ \begin{align*}
    a) & \quad x + 6y = 35 \\
        & \quad 5x - 5y = -70 \\
    b) & \quad 7x - 4y = -94 \\
        & \quad 5x + 6y = -14
\end{align*} \]

2) Use substitution to solve the following simultaneous equations

\[ \begin{align*}
    a) & \quad 4x + 5y = 17 \\
        & \quad x = y + 2 \\
    b) & \quad y = 4x - 2 \\
        & \quad 7x + 6y = 19
\end{align*} \]
3) Solve the following simultaneous equations

\[ \begin{align*}
  a) \quad & x = 3y \\
           & y = x^2 \\
  b) \quad & y = x^2 - 2 \\
           & y = x + 10 \\
  c) \quad & y = 2x + 5 \\
           & y = x^2 - 3x + 11 \\
  d) \quad & y = x + 7 \\
           & x^2 + y^2 = 37
\end{align*} \]

4) Solve the following inequality

\[ \begin{align*}
  a) \quad & 7z - 1 < 6 \\
  b) \quad & -5z + 2 > -3 \\
  c) \quad & 10z + 37 \leq 3z + 79
\end{align*} \]
5) Find the values of $A$ and $B$ by rearranging the following inequality into the form $A < x < B$.  

$-4 < 6x - 4 < 2$  

6) Find the set of values of $x$ for which  

$5y + 2 \geq 6y + 5$ and $5y + 8 \leq 7y + 24$  

7) Find the set of values of $x$ for which $x^2 - x - 6 \leq 0$ by sketching the graph $y = x^2 - x - 6$.  

8) Using the graph given below find the set of values that satisfy $-x^2 - 2x + 3 < 0$.  

\[d) \ 2(z - 27) < 5(z - 6)\]
9) Factorise and solve the following quadratic inequality

a) \( x^2 + 10x + 24 < 0 \)

b) \( 2y^2 - 15y + 25 > 0 \)

10) Find the range of values of \( k \) for which the following equation has real roots.

\[ kx^2 - 12x + 2 = 0 \]

11) Find the range of values of \( k \) for which the following equation has no real roots.

\[ 2x^2 + 8x + k = 0 \]
Solutions for the assessment Equations and Inequalities

1) a) $x = -7$ and $y = 7$  
   b) $x = -10$ and $y = 6$

2) a) $x = 3$ and $y = 1$  
   b) $x = 1$ and $y = 2$

3) a) $x = 0$ and $y = 0$ or $x = \frac{1}{3}$ and $y = \frac{1}{9}$  
   b) $x = 4$ and $y = 14$ or $x = -3$ and $y = 7$
   
   c) $x = 3$ and $y = 11$ or $x = 2$ and $y = 9$
   
   d) $x = -6$ and $y = 1$ or $x = -1$ and $y = 6$

4) a) $z < 1$  
   b) $z < 1$
   
   c) $z \leq 6$  
   d) $z > -8$

5) $A = 0$ and $B = 1$

6) As $y \leq -3$ or $y \geq -8$. Then final answer is $-8 \leq y \leq -3$

7)

![Graph of a quadratic function with x-range -2 to 3 and y-range -8 to 8]

8) $x < -3$, $x > 1$

9) a) $-6 < x < -4$  
   b) $y < 2\frac{1}{2}$, $y > 5$

10) $k < 18$

11) $k > 8$