Simultaneous Equations - Past Edexcel Exam Questions

1. Solve the simultaneous equations

\[ \begin{align*}
  x + y &= 2 \\
  x^2 + 2y &= 12 \\
\end{align*} \]

[6]

Question 4 - Jan 2005

2. Solve the simultaneous equations

\[ \begin{align*}
  x - 2y &= 1 \\
  x^2 + y^2 &= 29 \\
\end{align*} \]

[6]

Question 5 - May 2005

3. Solve the simultaneous equations

\[ \begin{align*}
  y &= x - 2 \\
  y^2 + x^2 &= 10 \\
\end{align*} \]

[6]

Question 4 - Jan 2007

4. (a) By eliminating \( y \) from the equations

\[ \begin{align*}
  y &= x - 4 \\
  2x^2 - xy &= 8 \\
\end{align*} \]

show that

\[ x^2 + 4x - 8 = 0 \]

[2]

(b) Hence, or otherwise, solve the simultaneous equations

\[ \begin{align*}
  y &= x - 4 \\
  2x^2 - xy &= 8 \\
\end{align*} \]

giving your answers in the form \( a \pm b\sqrt{3} \), where \( a \) and \( b \) are integers.

[5]

Question 6 - May 2007
5. Solve the simultaneous equations

\[\begin{align*}
y - 3x + 2 &= 0 \\
y^2 - x - 6x^2 &= 0
\end{align*}\]  

[7]  
Question 5 - Jan 2010

6. Solve the simultaneous equations

\[\begin{align*}
x + y &= 2 \\
4y^2 - x^2 &= 11
\end{align*}\]  

[7]  
Question 4 - May 2011

7. Given the simultaneous equations

\[\begin{align*}
2x + y &= 1, \\
x^2 - 4ky + 5k &= 0
\end{align*}\]

where \(k\) is a non zero constant,

(a) show that

\[x^2 + 8kx + k = 0\]  

[2]  
Given that \(x^2 + 8kx + k = 0\) has equal roots,

(b) find the value of \(k\).  

[3]  
(c) For this value of \(k\), find the solution of the simultaneous equations.  

[3]  

Question 10 - May 2013
Simultaneous Equations Questions

Solutions

1. $(-2, 4), (4, -2)$

2. $(5, 2), \left(\frac{-23}{5}, \frac{-14}{5}\right)$

3. $(-1, -3), (3, 1)$

4. (a) -
   (b) $(-2 + 2\sqrt{3}, -6 + 2\sqrt{3}), (-2 - 2\sqrt{3}, -6 - 2\sqrt{3})$

5. $\left(\frac{1}{3}, -1\right), (4, 10)$

6. (a) -
   (b) $(5, -3), \left(\frac{1}{3}, \frac{5}{3}\right)$

7. (a) -
   (b) $k = \frac{1}{16}$
   (c) $\left(-\frac{1}{4}, \frac{3}{2}\right)$