

WORKSHEET ANSWERS - 3-SPACE REVIEW

1. KL will be a 3 x 4 matrix

$$KL = \begin{pmatrix} -7 & -20 & 14 & 5 \\ 12 & 25 & -11 & -29 \\ -1 & 5 & -9 & 18 \end{pmatrix}$$

2. $\det M = -31$

3. Product = $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$, therefore the matrices are inverses.

4. $3x - 4y = 7$
 $2x - 3y = 9$

5. i) $\left\langle \begin{array}{ccc|c} 6 & 1 & 3 & 29 \\ 1 & 1 & -3 & -16 \\ -5 & 1 & 3 & -4 \end{array} \right\rangle$

$$ii) \begin{pmatrix} 6 & 1 & 3 \\ 1 & 1 & -3 \\ -5 & 1 & 3 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 29 \\ -16 \\ -4 \end{pmatrix}$$

Solution: $x = 3, y = -4, z = 5$

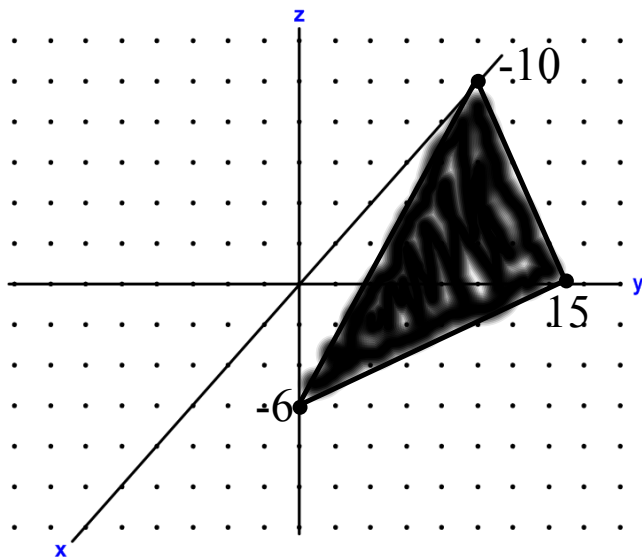
- 6 a. These are equations of the same line, so there are infinitely many solutions.

- c. These are parallel lines, so there is no solution.

The inverse matrix method could not have been used. The coefficient matrix does not have an inverse in both cases since the determinant is equal to zero.

- 7 a. $x = -1, y = 3$ b. $x = -4, y = -3$

8. $x\text{-int} = -10$, $y\text{-int} = 15$, $z\text{-int} = -6$



9. iii) Infinitely many solutions
ii) Exactly one solution
i) No solution

10. $x = -3$, $y = -1$, $z = -4$

11. The integers are -6, -2, and 3

12. There are 17 toonies, 12 loonies, and 23 quarters in the jar.

13. A gold medal is worth 10 points, a silver is worth 5 points, and a bronze 1 point.