LCOL Basic Skills – Pack 7

Topics

Algebra – Can I solve a simultaneous equation (1 linear equation, 1 non-linear)?

Last Needed - 2021

1 ▶ 2012 LCOL Paper 1 – Question 3 (b) ☐

Complex Numbers – Can I simplify a complex number expression?

Last Needed – 2023

2 ▶ 2009 LCOL Paper 1 – Question 4 (a) ☐

Area, Perimeter and Volume – Can I calculate the surface areas and volumes of spheres and hemispheres?

Last Needed - 2022

3 ▶ 2006 LCOL Paper 2 – Question 1 (c) ☐

Differentiation – Can I calculate distances, speeds and accelerations using calculus?

Last Needed - 2020

4 ▶ 2011 LCOL Paper 1 – Question 7 (c) ☐

Patterns – Can I find terms of an arithmetic sequence given the formula for the general term?

Last Needed - 2022

5 ▶ 2011 LCOL Paper 1 – Question 3 ☐

www.mathspoints.ie for **worked solutions** to these questions.

LCOL Resources by Topic

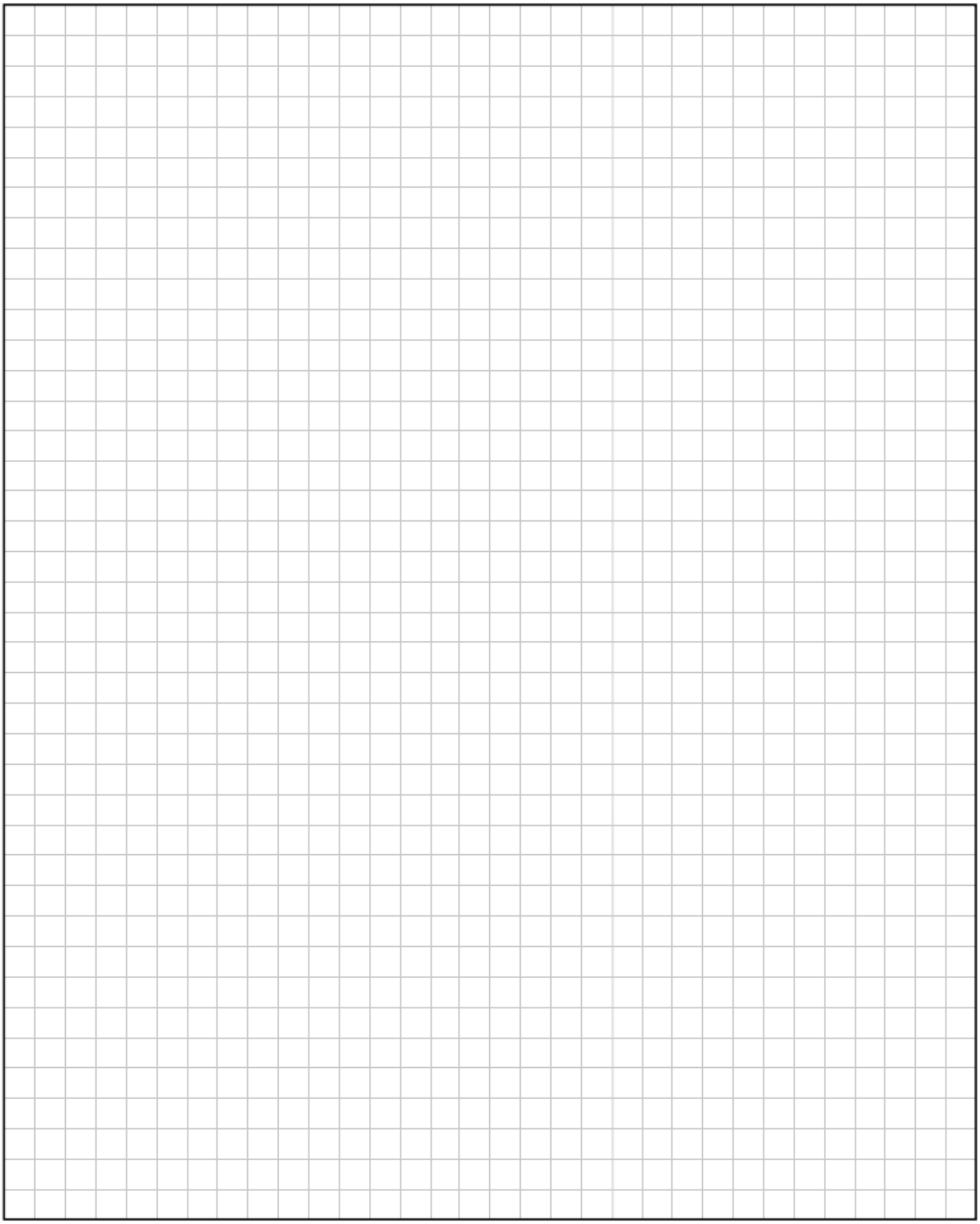
LCOL Revision – 50 Common Questions

1 ▶ 2012 LCOL Paper 1 – Question 3 (b)

Solve for x and y

$$x - y + 5 = 0$$

$$x^2 + y^2 = 17$$

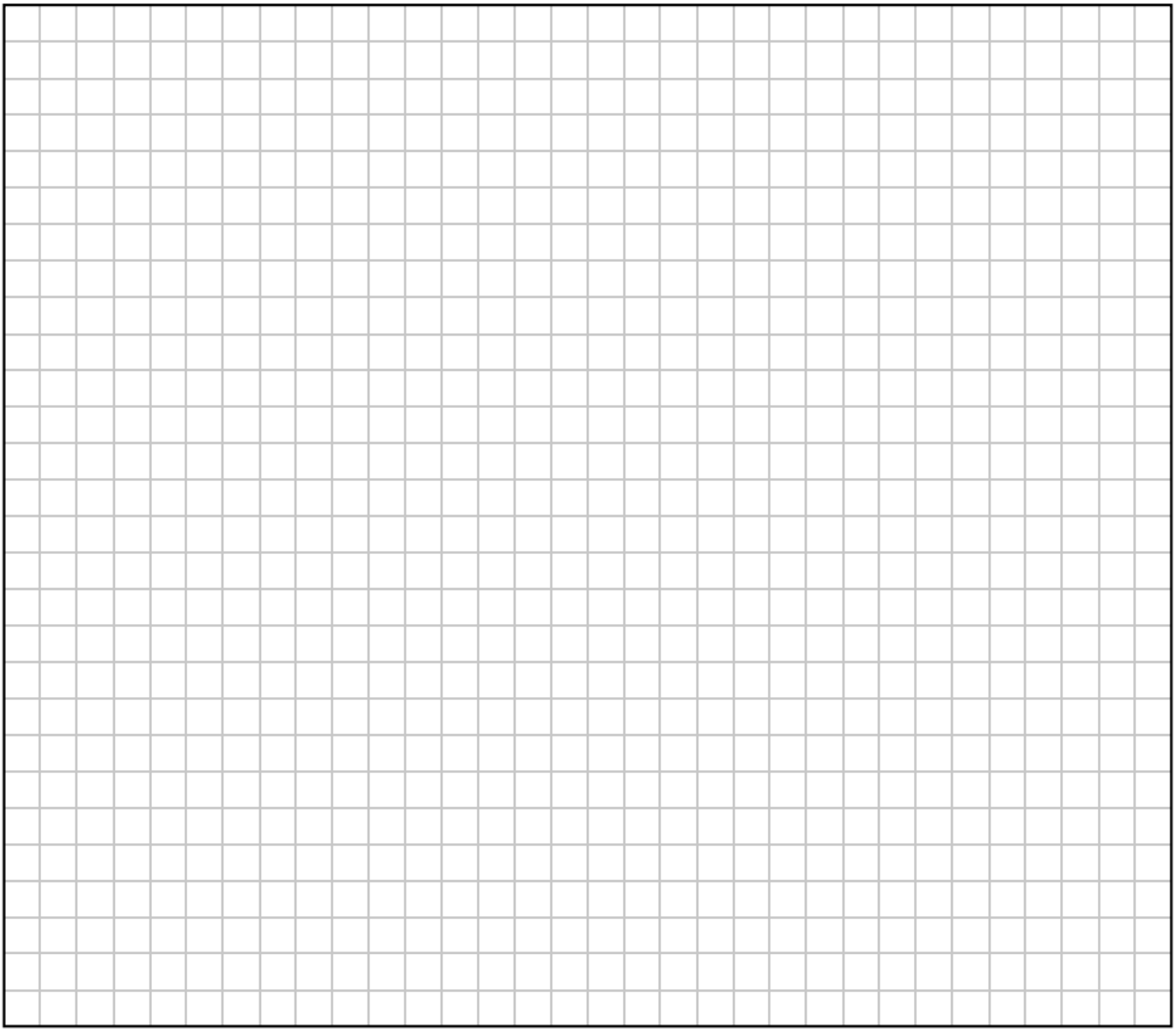


2 ▶ 2009 LCOL Paper 1 – Question 4 (a)

Given that $i^2 = -1$, simplify

$$2(3 - 5i) + 7i(2 + 3i)$$

and write your answer in the form $x + yi$, where $x, y \in \mathbf{R}$.



3 ▶ 2006 LCOL Paper 2 – Question 1 (c)

The volume of a hemisphere is 486π cm^3.

(i) Find the radius of the hemisphere.

(ii) Find the volume of the smallest rectangular box that the hemisphere will fit into.

4 ▶ 2011 LCOL Paper 1 – Question 7 (c)

A ball is rolled in a straight line along a surface.

The distance, s metres, the ball travels is given by

$$s = 18t - 2t^2$$

where t is the time in seconds from the instant the ball begins to move.

(i) Find the speed of the ball after 3 seconds.

(ii) How far is the ball from the starting point when it stops moving?

(iii) Show that the speed of the ball decreases at a constant rate while it is moving.

5 ▶ 2011 JCHL Paper 1 – Question 3

The terms in an arithmetic sequence are given by the formula

$T_n = 38 - 4n$, for $n = 1,\ 2,\ 3,\ 4,\ \ldots$

(a) Write out the first three terms in the sequence.

(b) What is the first negative term of the sequence.