# Algebra – 2022 IGCSE 0444

**1.** June/ 2022/Paper_21/No.7

$$s = \frac{1}{2}at^2$$

**(a)** Work out the value of $s$ when $a = 0.9$ and $t = 4$.

$s =$ ..... [1]

**(b)** Solve for $t$.

$t =$ ..... [2]

**2.** June/ 2022/Paper_21/No.8

Factor completely.

$$14xy - 7y^2$$

..... [2]

**3.** June/ 2022/Paper_21/No.21

Solve.

$$\frac{t}{3t-2} = \frac{3}{5}$$

$t =$ ..... [3]

**4.** June/ 2022/Paper_21/No.22

Solve.

$$2\sqrt{x}+1=7-\sqrt{x}$$

$x =$ ..... [2]

**5.** June/ 2022/Paper_21/No.23

Factor completely.

$$1-q-a+aq$$

..... [2]

**6.** June/ 2022/Paper_21/No.25

$$x^2+8x+10=(x+p)^2+q$$

**(a)** Find the value of $p$ and the value of $q$.

$p =$ .....

$q =$ ..... [2]

**(b)** Solve.

$$x^2+8x+10=30$$

$x =$ ..... or $x =$ ..... [2]

**7.** June/ 2022/Paper_21/No.27

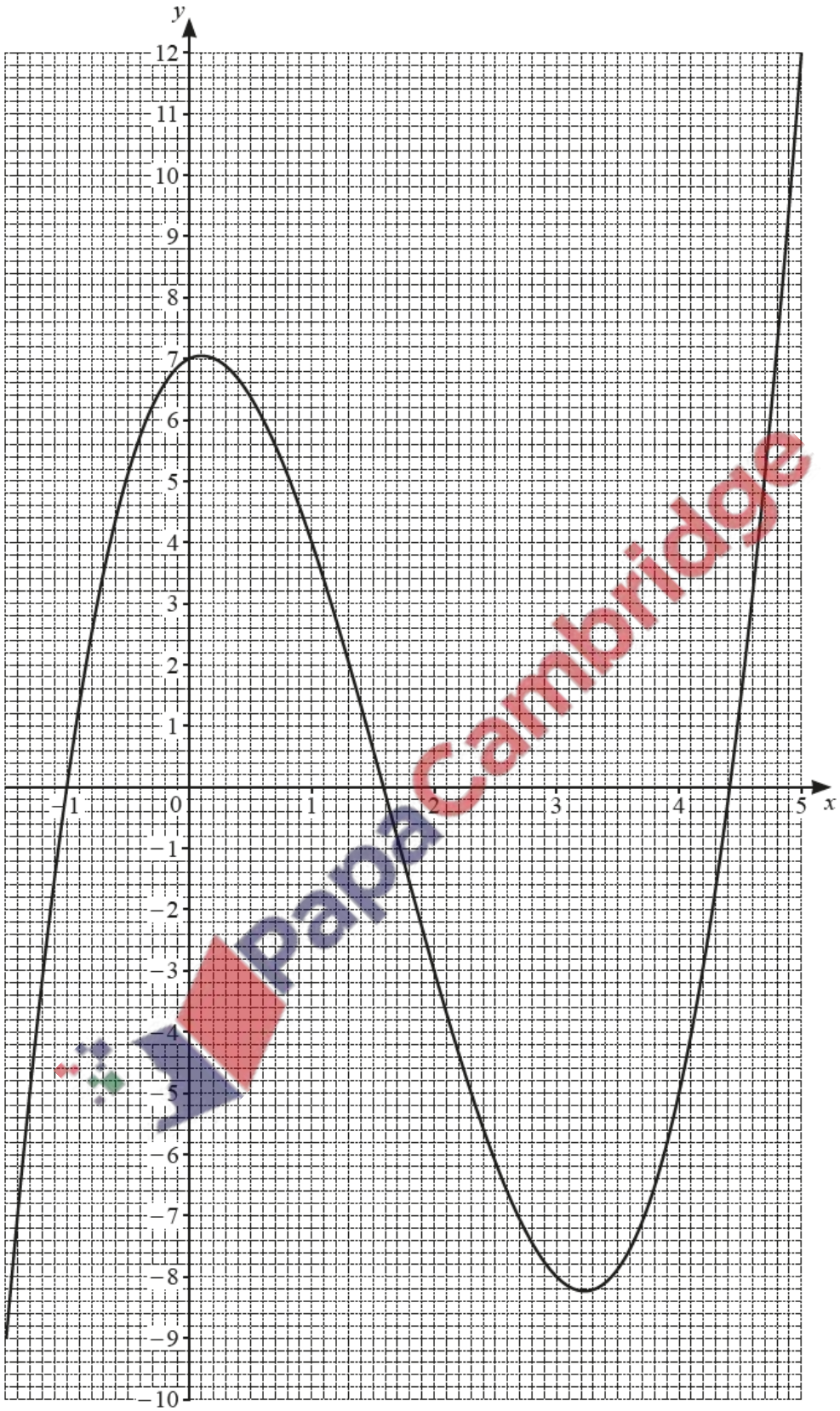
Simplify.

$$\frac{x-3}{x^2-2x-3}$$

..... [2]

**8.** June/ 2022/Paper_41/No.6

**(a)**



The diagram shows the graph of $y = f(x)$ for $-1.5 \leqslant x \leqslant 5$.

**(i)** Find $f(2)$.

..... [1]

**(ii)** Solve the equation $f(x) = 0$ for $-1.5 \leqslant x \leqslant 5$.

$x =$ ..... or $x =$ ..... or $x =$ ..... [3]

**(iii)** $f(x) = k$ has three solutions for $-1.5 \leqslant x \leqslant 5$ where $k$ is an integer.

Find the smallest possible value of $k$.

$k =$ ..... [1]

**(iv)** By drawing a suitable straight line solve the equation $f(x) = 10 - 2x$.

$x =$ ..... [3]

**(v)** On the grid, draw a line $y = mx$ so that $f(x) = mx$ has exactly one solution for $-1.5 \leqslant x \leqslant 5$. [2]

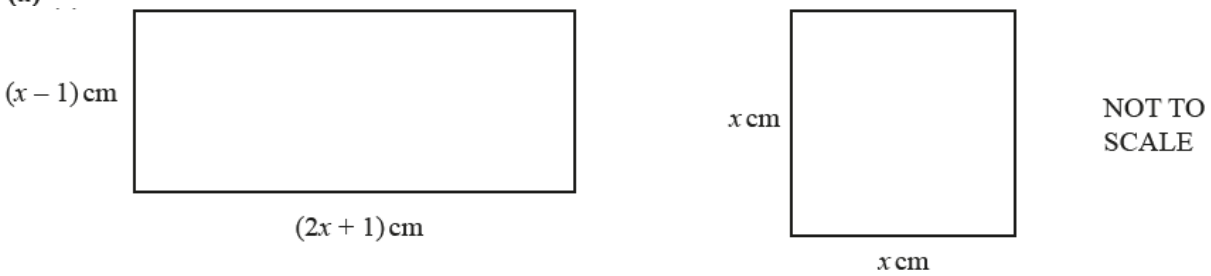
**(b)** Line $L$ passes through the point $(4, -1)$ and is perpendicular to the line $y = 2x + 5$.

Work out the equation of line $L$, giving your answer in the form $y = mx + b$.

$y =$ ..... [4]

**9.** June/ 2022/Paper_41/No.9

**(a)**



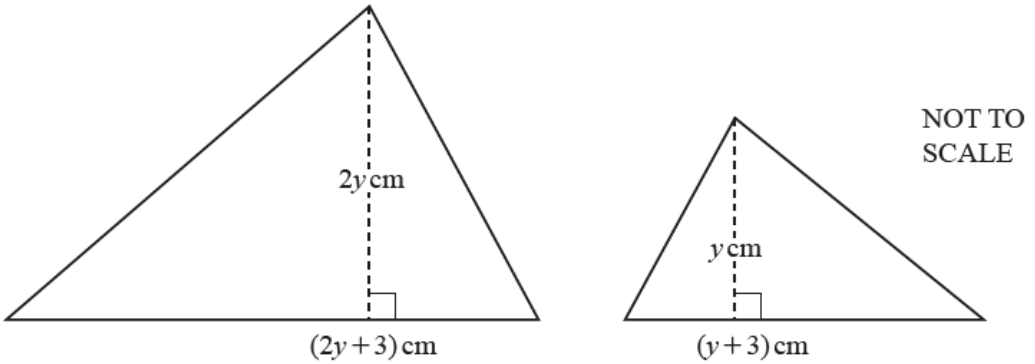

The area of the rectangle is $29\,cm^2$ greater than the area of the square.
The difference between the perimeters of the two shapes is $k$ cm.

Find the value of $k$.
You must show all your work.



$k =$ ..... [6]

**(b)**




The area of the larger triangle is $2\,\text{cm}^2$ greater than the area of the smaller triangle.

**(i)** Show that $3y^2 + 3y - 4 = 0$.

[4]

**(ii)** Find the area of the smaller triangle.
You must show all your work.

..... $\text{cm}^2$ [4]

**10.** June/ 2022/Paper_41/No.10

**(a)** Solve the system of linear equations.

$$2p+q=2$$
$$p-q=-\frac{1}{2}$$

$p =$ .....

$q =$ ..... [2]

**(b)** Hence, for $0° \leqslant u \leqslant 360°$ and $0° \leqslant v \leqslant 360°$, solve this system of equations.

$$2\sin u+\cos v=2$$
$$\sin u-\cos v=-\frac{1}{2}$$

$u =$ ..... or $u =$ .....

$v =$ ..... or $v =$ ..... [4]