

[3]

①

1 Find the set of values of the constant k for which the quadratic equation

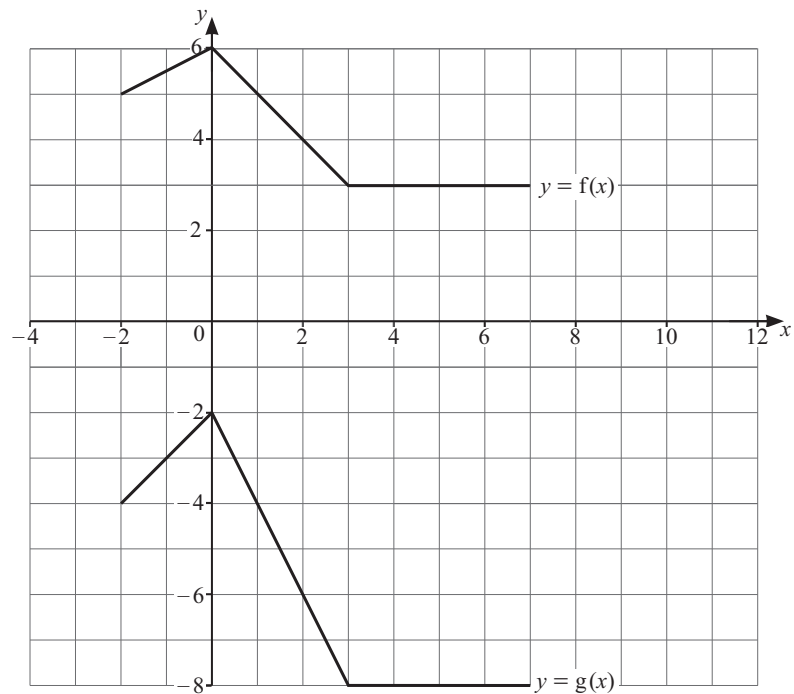
$$3kx^2 + (k+8)x + 3 = 0$$

[4]

②

1 Solve the equation $6 \sin \theta = 1 + \frac{4}{\sin \theta}$ for $-180^\circ < \theta < 180^\circ$.

[4]



The diagram shows the graphs with equations $y = f(x)$ and $y = g(x)$.

Describe fully a sequence of two transformations which transforms the graph of $y = f(x)$ to the graph of $y = g(x)$. Make clear the order in which the transformations should be applied. [4]

2 Find the coordinates of the points of intersection of the curve and the line with equations

$2xy + 5y^2 = 24$

and

$2x + y + 4 = 0.$

[4]

3 The coefficient of x' in the expansion of $\left(px' + \frac{7}{p}x\right)$ is 1280.

Find the value of the constant $p.$

[4]