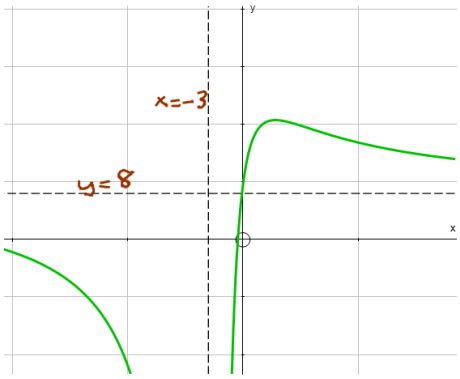
# Edexcel AS Mathematics Graphs and transformations

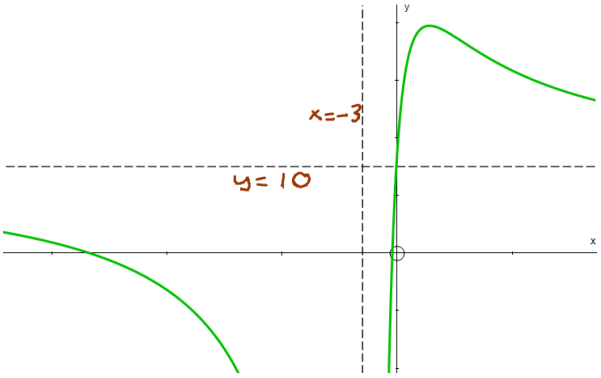
## Section 2: Transformations of graphs

### Solutions to Exercise level 3 (Extension)

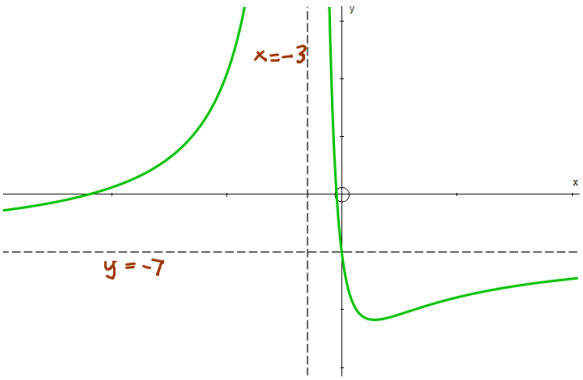
1. (i)



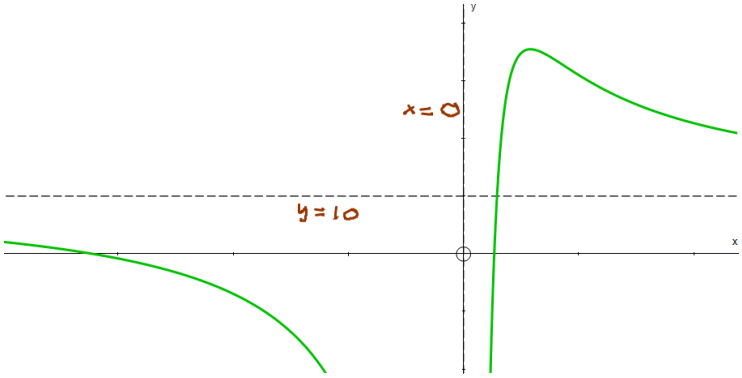

(ii)




(iii)

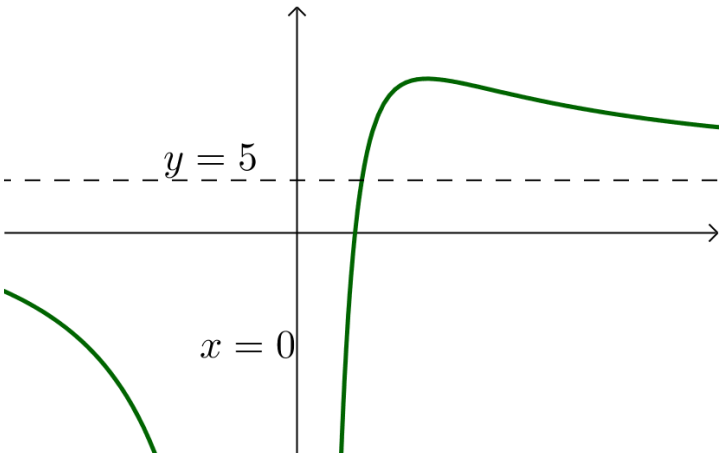



(iv)



(v)

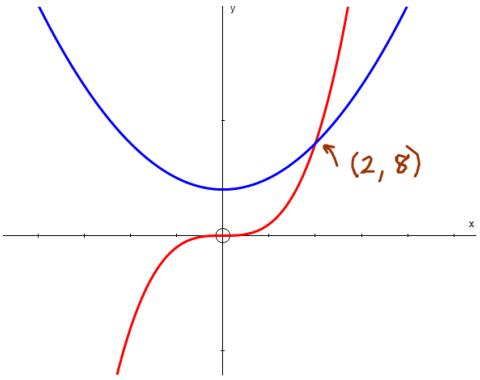



2. (i) $x^3 = x^2 + 4$

$\Rightarrow x^3 - x^2 - 4 = 0$

$\Rightarrow (x-2)(x^2 + x + 2) = 0$

$\Rightarrow x = 2, \quad y = 8$




(ii) $f(x) = x^3 - 9x^2 + 27x - 30$

$= (x-3)^3 - 3$

(iii) $g(x) = x^2 - 6x + 10$

$= (x-3)^2 + 1$

(iv) Parts (ii) and (iii) show that

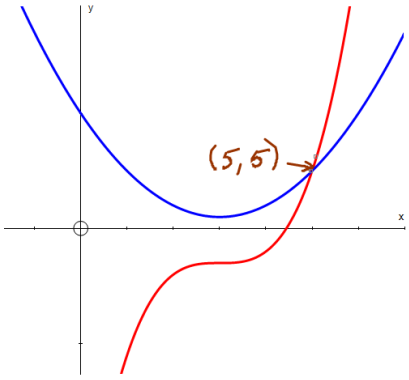
$f(x) = p(x-3) - 3$

$g(x) = q(x-3) - 3$

so the graphs are obtained by transforming both initial graphs by $\begin{pmatrix} 3 \\ -3 \end{pmatrix}$

and hence the new intersection is $(5, 5)$.

# Edexcel AS Maths Graphs 2 Exercise solutions




3. (i) $y = 3f(x)$

(ii) $y = f\left(x - \frac{a+b}{2}\right)$

(iii) $y = f(2x)$

(iv) $y = f(x) + k$

(v) $y = 3f\left(2\left(x - \frac{a+b}{2}\right)\right) + k$

(vi)