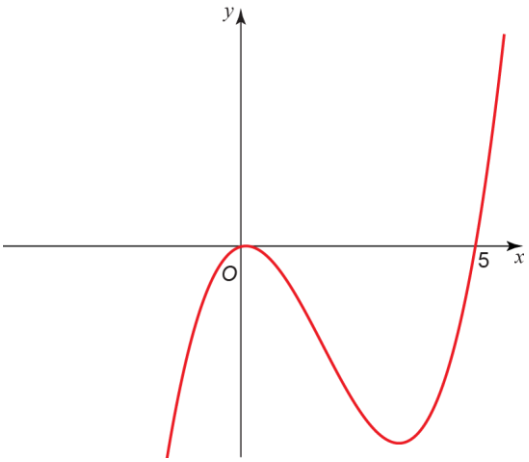
Transforming functions

Gold

The figure shows a sketch of the curve with equation $y = \mathrm{f}(x)$.
On a separate axis sketch the curve with equations:



a $y = \mathrm{f}(-x)$

b $y = -\mathrm{f}(x)$

Mark on each sketch the x-coordinate of any point, or points, where the curve touches or crosses the x-axis.

Silver

The point $P(4,5)$ lies on the curve with equation $y = \mathrm{f}(x)$.

a State the coordinates that point P is transformed to on the curve with equation $y = \mathrm{f}(2x)$.

b State the coordinates that point P is transformed to on the curve with equation $y = 2\mathrm{f}(x)$.

Bronze

The diagram shows a sketch of the curve $\mathrm{f}(x)$ which passes through the origin and the points $A(3,7)$ and $B(6,3)$.

Sketch the following:

a $y = \mathrm{f}(x) + 1$

b $y = \mathrm{f}(x) - 1$