


# Braslunio Cromlinau

*Curve Sketching*



 @mathemateg

 /adolygumathemateg

# Braslunio Cromlinau / Curve Sketching

Wrth lunio **braslun** ar gyfer graff o ffwythiant, dylech ddangos nodweddion allweddol y ffwythiant.

- Y **siâp** cyffredinol, yn cynnwys unrhyw gymesuredd.
- Y **rhyngdoriadau**  $x$  ag  $y$ .

Gallwch ddefnyddio cyfrifiannell graffigol i'ch helpu fraslunio'r graff.

Efallai bydd ffactorio'r ffwythiant yn eich helpu darganfod y rhyngdoriadau.

Bydd yn ddefnyddiol cofio siâp ffwythiannau cyffredin, a sut mae trawsffurfiadau graffiau yn effeithio'r siâp.

Gall datrysiadau pâr o hafaliadau cydamserol gael eu dangos fel croestoriadau'r graffiau.

When **sketching** a graph of a function, you should aim to show the key features of the function.

- Its general **shape**, including any symmetry.
- The  $x$  and  $y$  **intercepts**.

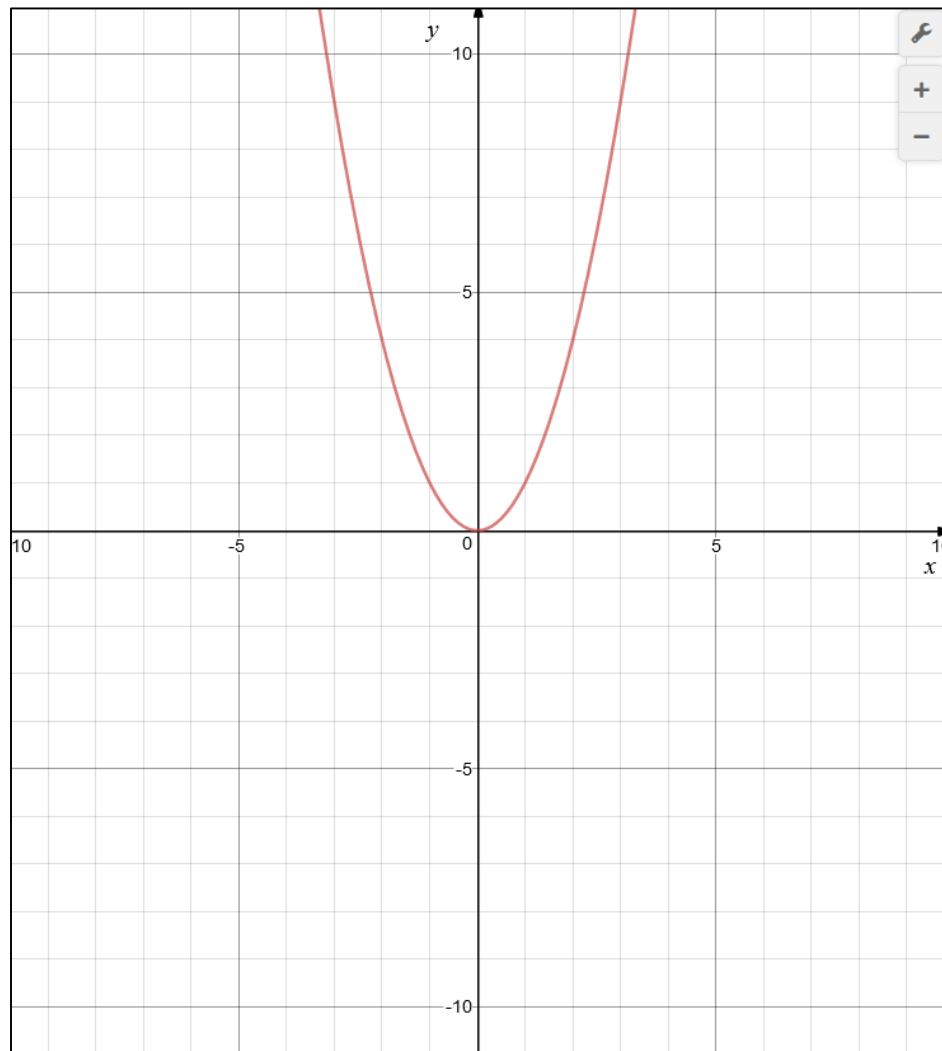
You can use a graphical calculator to help with sketching the graph.

Factorising the function may help in finding the intercepts.

It will be useful to memorise the shape of some common functions, and how graph transformations affect the shape.

The solutions to a pair of simultaneous equations can be shown as the intersection of both graphs.

# Rhai Ffwythiannau Cyffredin / *Some Common Functions*



[www.desmos.com/calculator](http://www.desmos.com/calculator)

$$y = x^2$$

Ffwythiant cwadratig /  
*A quadratic function.*

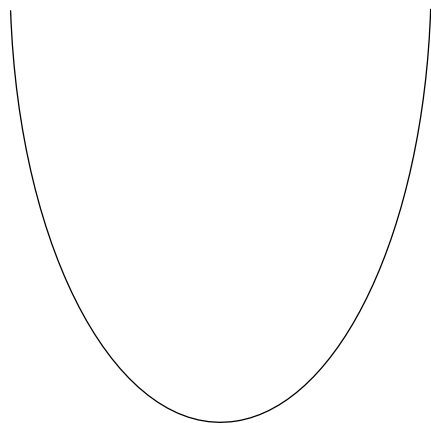
Siâp “U” /  
*“U” shaped.*

Yn gymesur o amgylch yr echelin- $y$  /  
*Symmetric about the  $y$ -axis.*

Mae gan  $y = x^4$  siâp tebyg. /  
 *$y = x^4$  has a similar shape.*

# Rhai Ffwythiannau Cyffredin / *Some Common Functions*

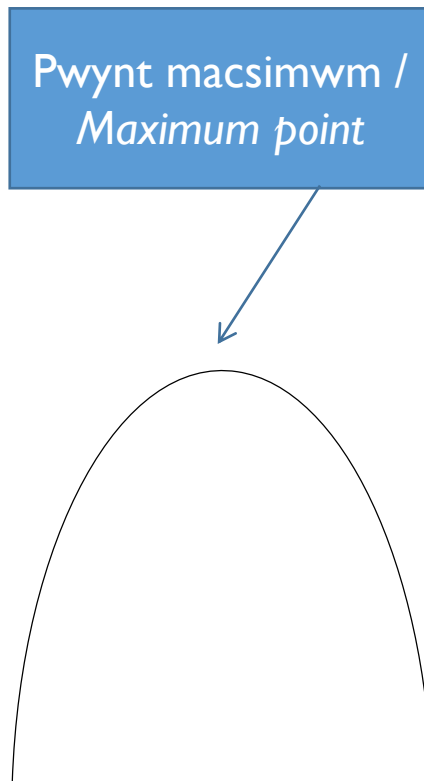
$$y = ax^2 + bx + c, a > 0$$



Yn gymesur o  
amgylch y llinell /  
*Symmetric about  
the line*  
 $x = -\frac{b}{2a}$

Pwynt minimwm /  
*Minimum point*

$$y = ax^2 + bx + c, a < 0$$



Pwynt macsimwm /  
*Maximum point*

Yn gymesur o  
amgylch y llinell /  
*Symmetric about  
the line*  
 $x = -\frac{b}{2a}$

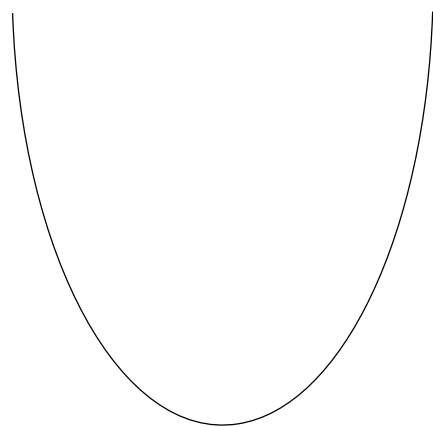
# Rhai Ffwythiannau Cyffredin / Some Common Functions

$$y = ax^2 + bx + c, a > 0$$

Ar ôl cwblhau'r sgwâr /

After completing the square:

$$y = a(x + p)^2 + q$$



Pwynt minimwm /  
Minimum point

Y pwynt minimwm  
yw / The minimum  
point is  
 $(-p, q)$ .

Yn gymesur o  
amgylch y llinell /  
Symmetric about  
the line  $x = -p$   
neu / or  $x = -\frac{b}{2a}$ .

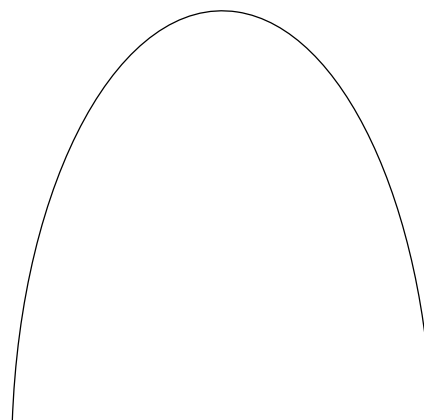
$$y = ax^2 + bx + c, a < 0$$

Ar ôl cwblhau'r sgwâr /

After completing the square:

$$y = a(x + p)^2 + q$$

Pwynt macsimwm /  
Maximum point

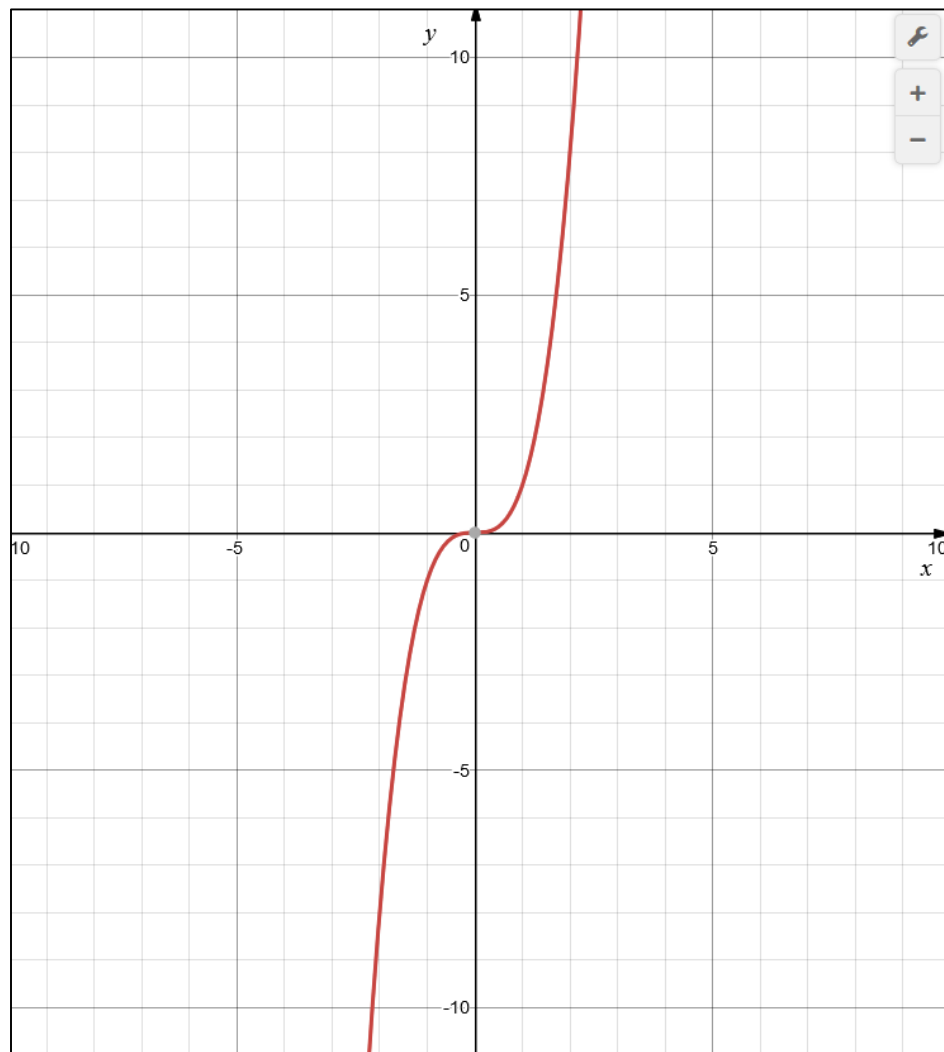


Y pwynt macsimwm  
yw / The maximum  
point is  
 $(-p, q)$ .

Yn gymesur o  
amgylch y llinell /  
Symmetric about  
the line  $x = -p$   
neu / or  $x = -\frac{b}{2a}$ .

# Rhai Ffwythiannau Cyffredin / *Some Common Functions*

[www.desmos.com/calculator](http://www.desmos.com/calculator)



$$y = x^3$$

Ffwythiant ciwbig /  
*A cubic function.*

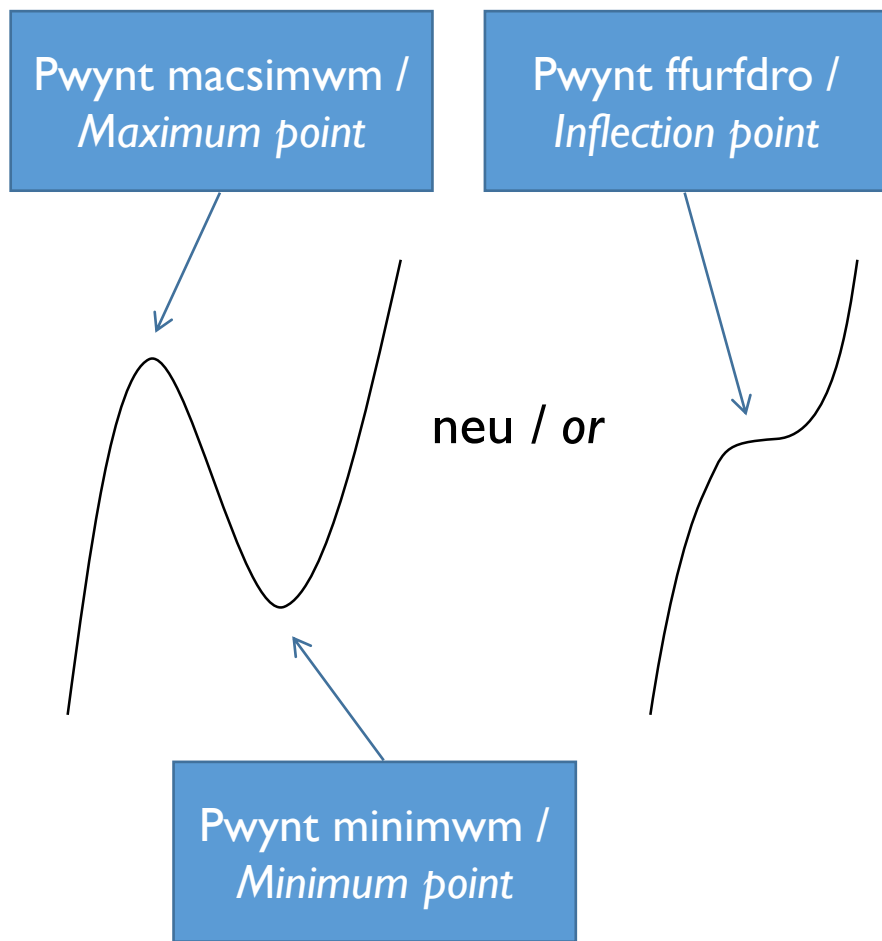
Siâp “S” /  
*“S” shaped.*



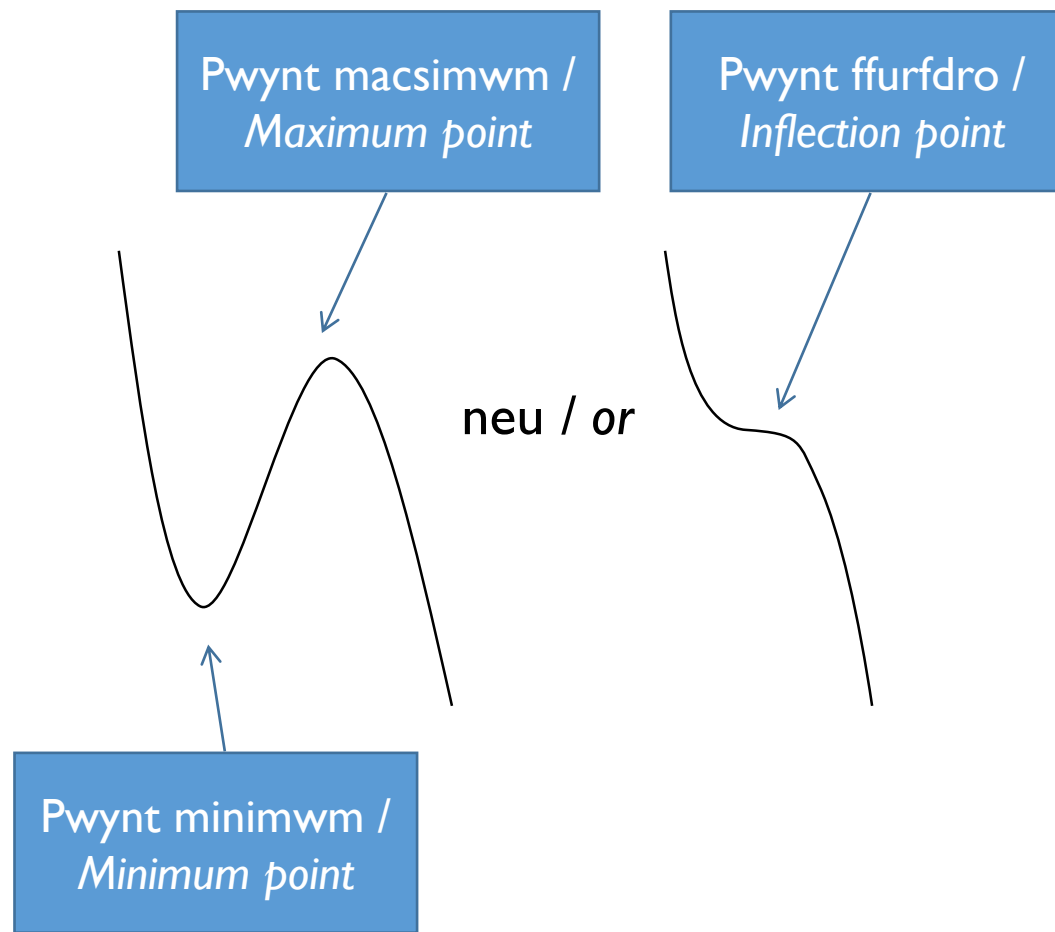
Mae gan  $y = x^5$  siâp tebyg. /  
 *$y = x^5$  has a similar shape.*

# Rhai Ffwythiannau Cyffredin / *Some Common Functions*

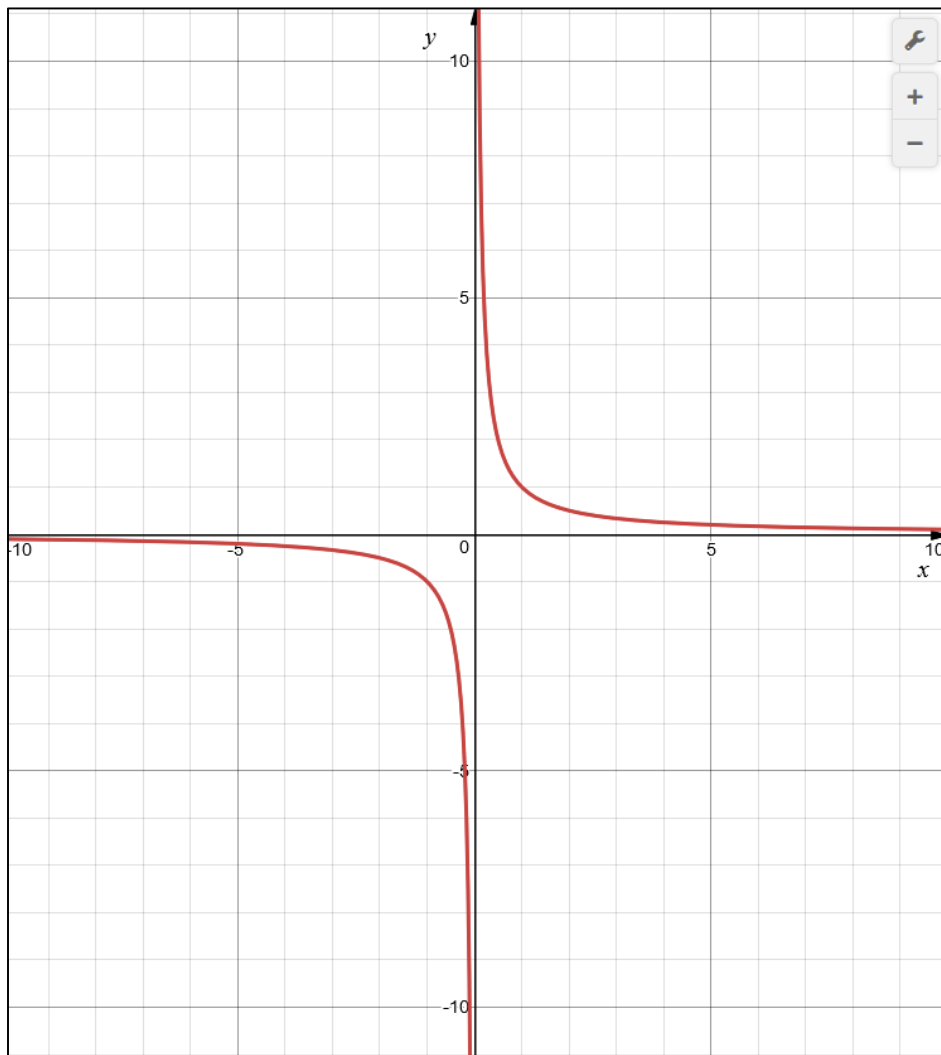
$$y = ax^3 + bx^2 + cx + d, a > 0$$



$$y = ax^3 + bx^2 + cx + d, a < 0$$



# Rhai Ffwythiannau Cyffredin / *Some Common Functions*



[www.desmos.com/calculator](http://www.desmos.com/calculator)

$$y = \frac{1}{x}$$

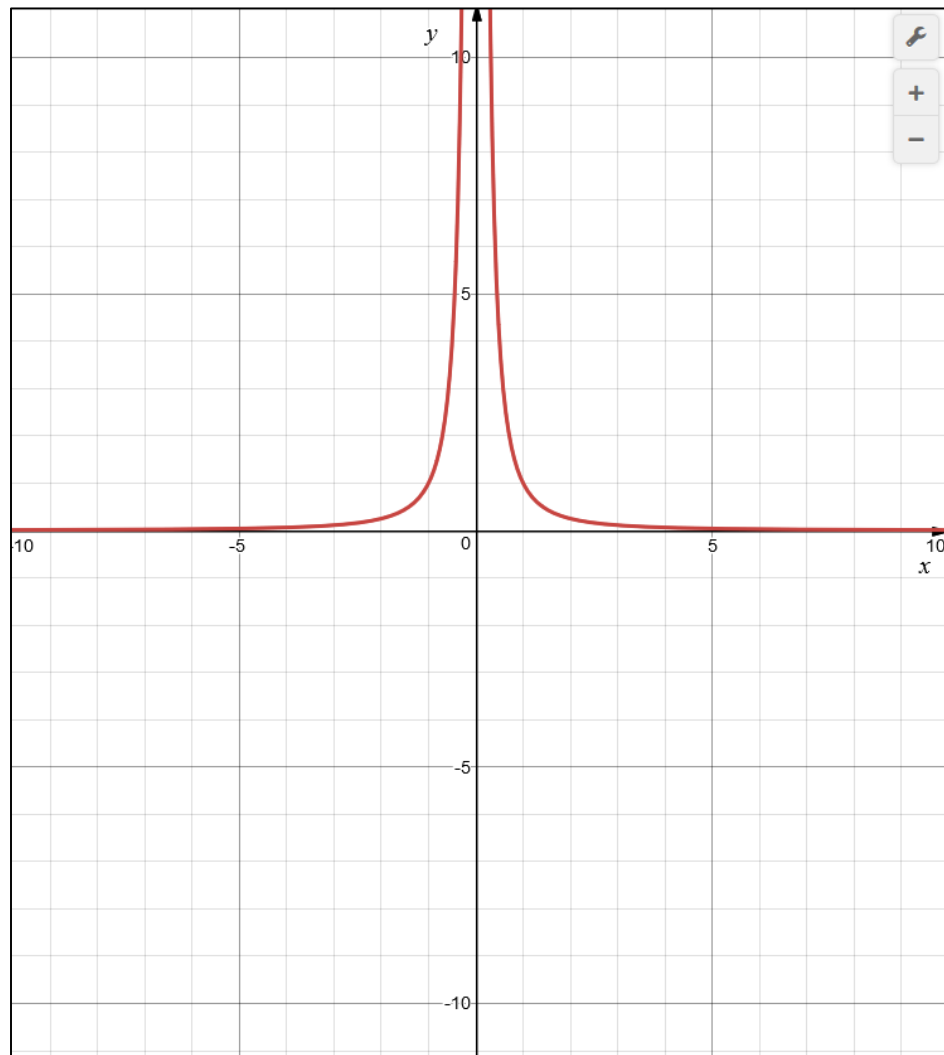
Ffwythiant cilyddol /  
*A reciprocal function.*

Heb ei ddiffinio ar gyfer  $x = 0$  /  
*Not defined for  $x = 0$ .*

Mae'r echelinau  $x$  ag  $y$  yn asymptotau /  
*The  $x$  and  $y$  axes are asymptotes.*



# Rhai Ffwythiannau Cyffredin / *Some Common Functions*



[www.desmos.com/calculator](http://www.desmos.com/calculator)

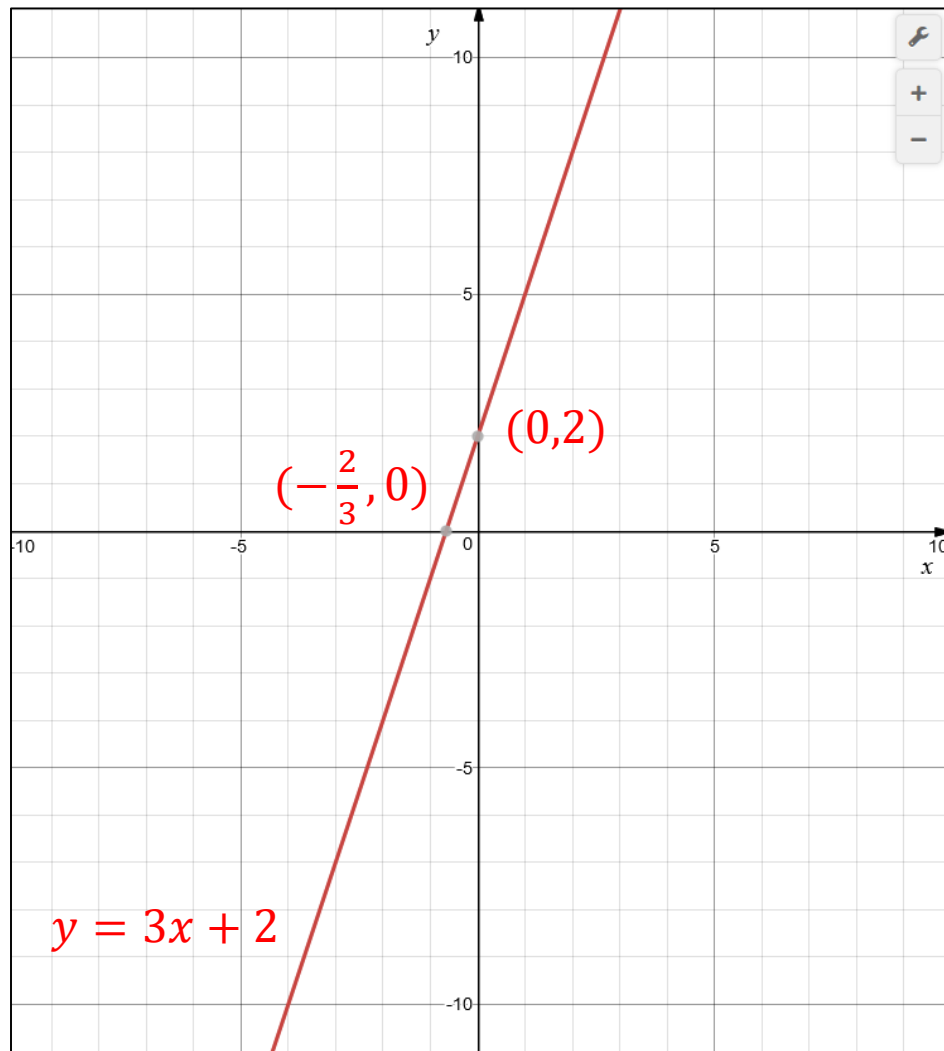
$$y = \frac{1}{x^2}$$

Ffwythiant cilyddol /  
*A reciprocal function.*

Heb ei ddiffinio ar gyfer  $x = 0$  /  
*Not defined for  $x = 0$ .*

Mae'r echelinau  $x$  ag  $y$  yn asymptotau /  
*The  $x$  and  $y$  axes are asymptotes.*

# Rhai Ffwythiannau Cyffredin / *Some Common Functions*



[www.desmos.com/calculator](http://www.desmos.com/calculator)

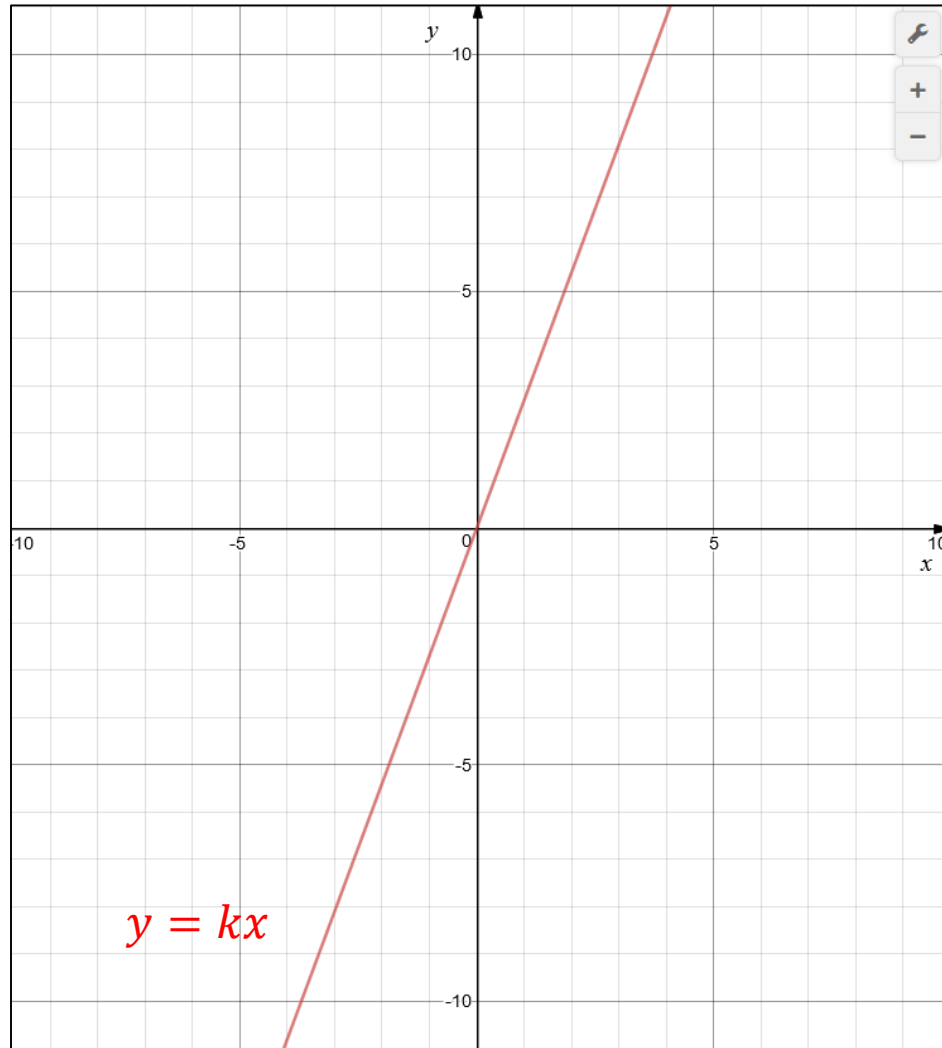
$$y = mx + c$$

Ffwythiant llinol /  
*A linear function.*

Graddiant  $m$  /  
*Gradient  $m$ .*

Rhyngdoriad- $y$  yn  $(0, c)$  /  
 *$y$ -intercept at  $(0, c)$ .*

# Graff Cyfrannedd Union / *Direct Proportion Graph*



[www.desmos.com/calculator](http://www.desmos.com/calculator)

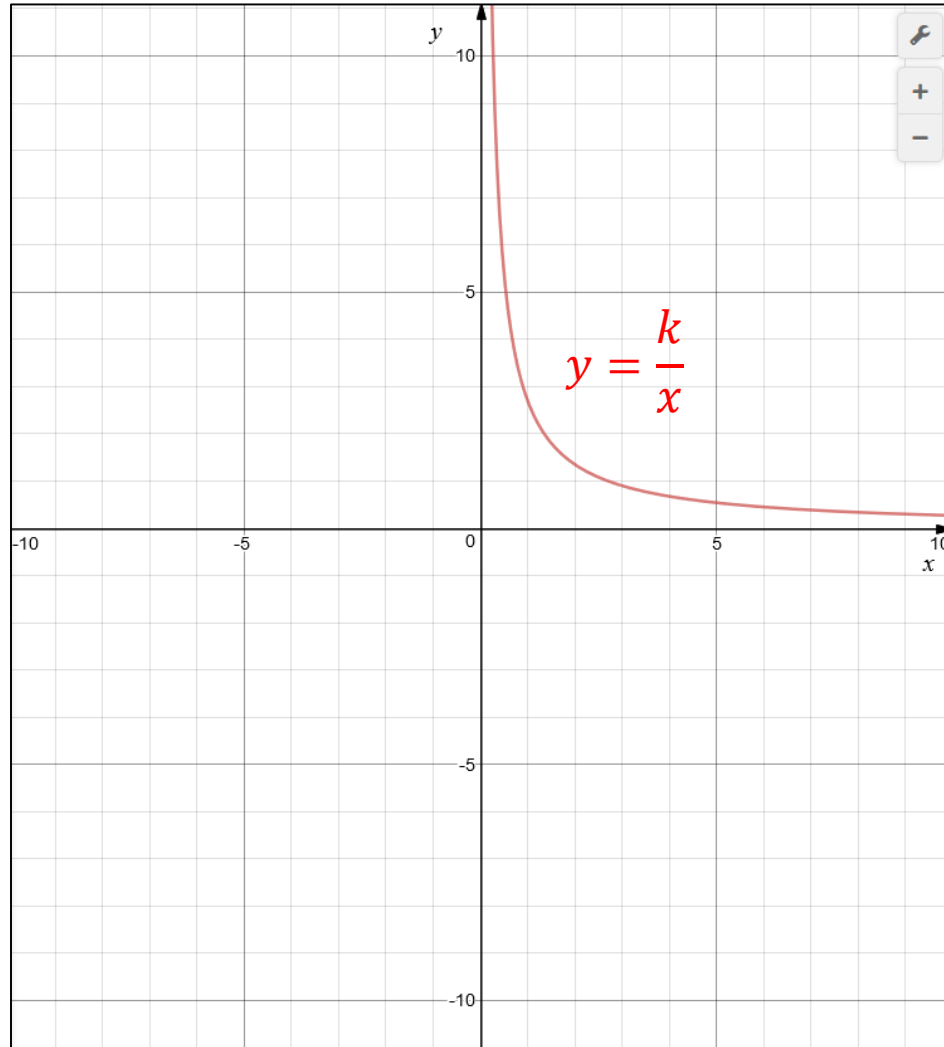
$$y \propto x$$
$$y = kx$$

Ffwythiant llinol /  
*A linear function.*

Graddiant  $k$  /  
*Gradient  $k$ .*

Rhyngdoriad- $y$  yn  $(0,0)$  /  
 *$y$ -intercept at  $(0,0)$ .*

# Graff Cyfrannedd Gwrthdro / *Inverse Proportion Graph*



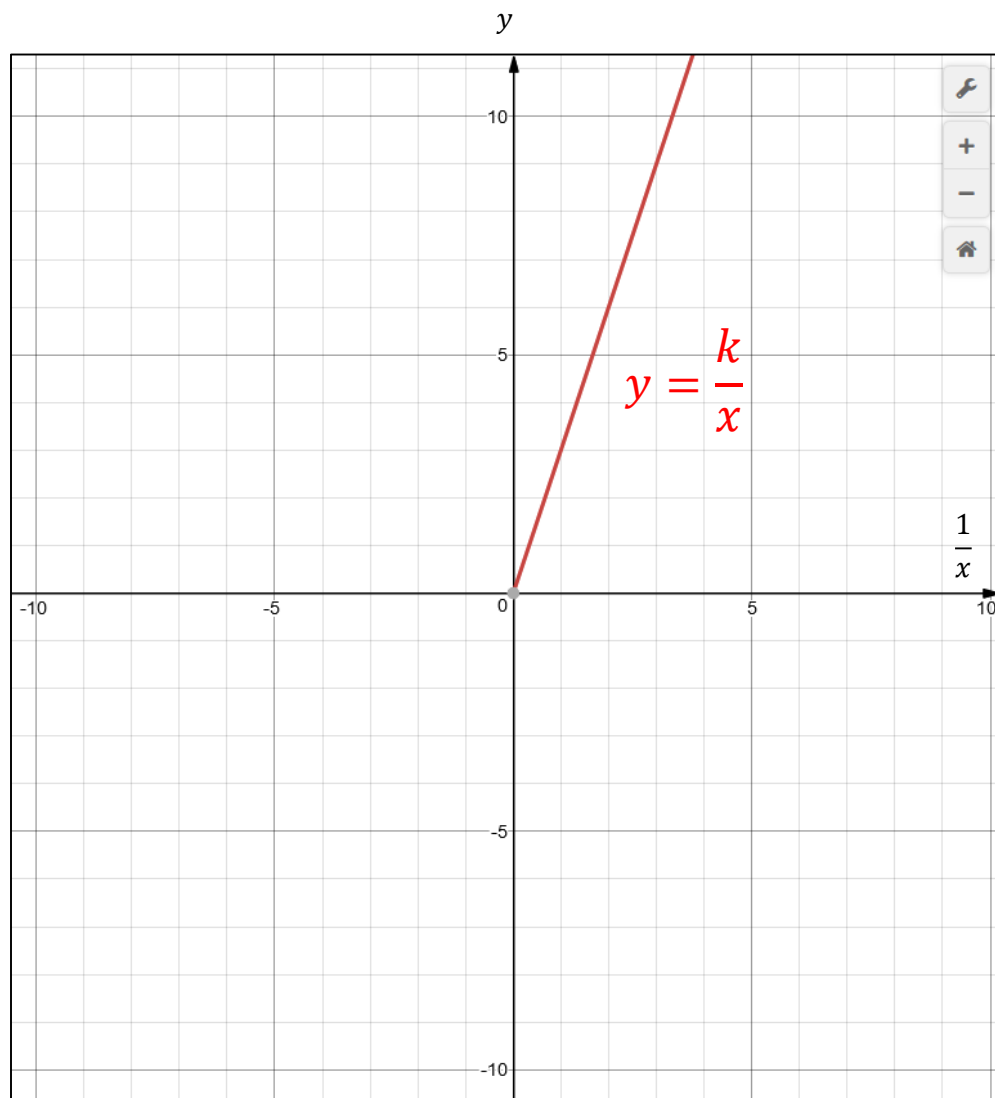
[www.desmos.com/calculator](http://www.desmos.com/calculator)

$$y \propto \frac{1}{x}$$
$$y = \frac{k}{x}$$

Ffwythiant cilyddol /  
*A reciprocal function.*

Mae'r echelinau  $x$  ag  $y$  yn asymptotau /  
*The  $x$  and  $y$  axes are asymptotes.*

# Graff Cyfrannedd Gwrthdro / *Inverse Proportion Graph*



[www.desmos.com/calculator](http://www.desmos.com/calculator)

$$y \propto \frac{1}{x}$$
$$y = \frac{k}{x}$$

Ffwythiant cilyddol /  
*A reciprocal function.*

Wrth blotio  $y$  yn erbyn  $\frac{1}{x}$  cawn ffwythiant llinol sydd efo graddiant  $k$ .

*By plotting  $y$  against  $\frac{1}{x}$  we obtain a linear function with gradient  $k$ .*