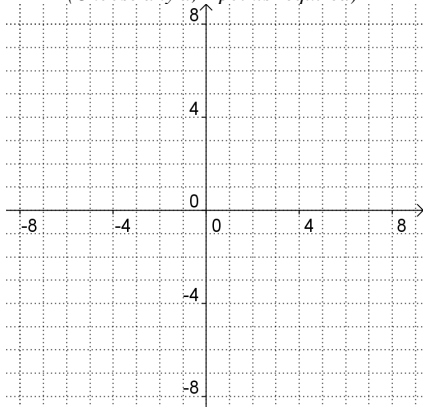


# Absolutely vital functions

## Power functions $f(x) = x^n$ (where $n$ is any real number)

$$f(x) = a$$

(Choose any  $a$ ; 2 points required)

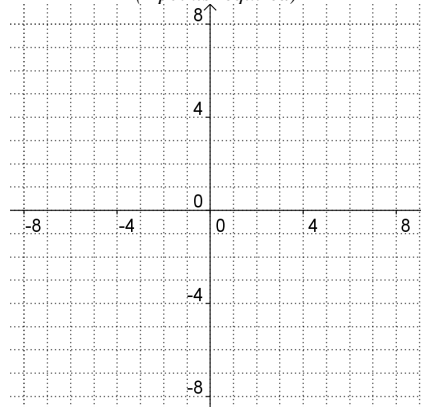


Domain:

Range:

$$f(x) = x$$

(2 points required)

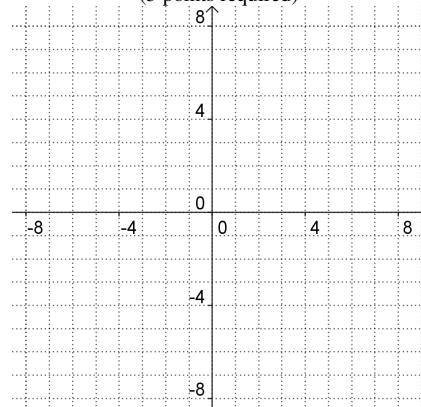


Domain:

Range:

$$f(x) = x^2$$

(5 points required)

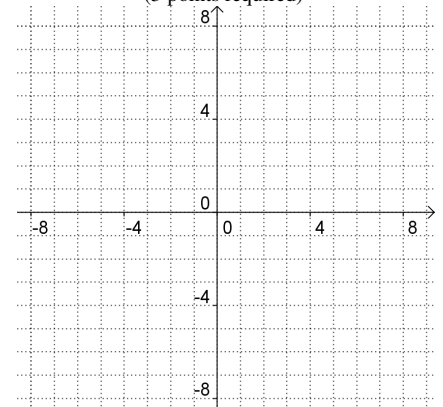


Domain:

Range:

$$f(x) = x^3$$

(5 points required)

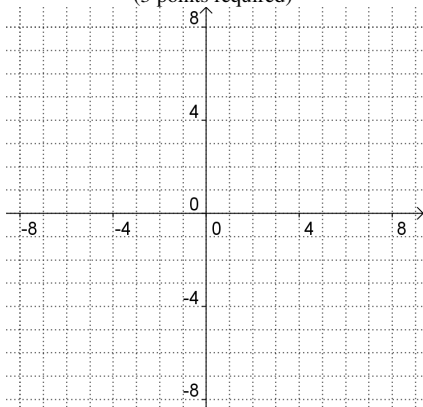


Domain:

Range:

$$f(x) = x^{1/2}$$

(3 points required)

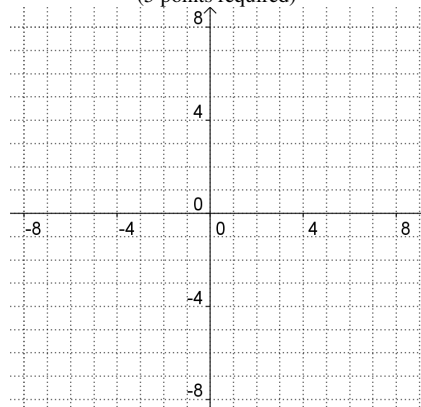


Domain:

Range:

$$f(x) = x^{1/3}$$

(5 points required)

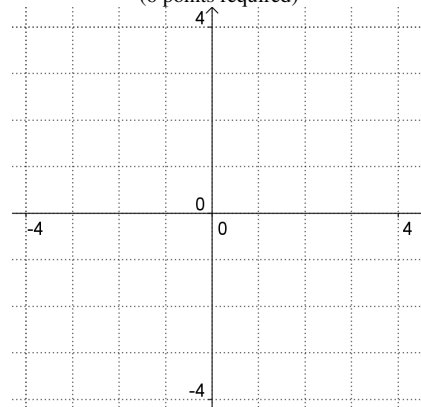


Domain:

Range:

$$f(x) = x^{-1}$$

(6 points required)



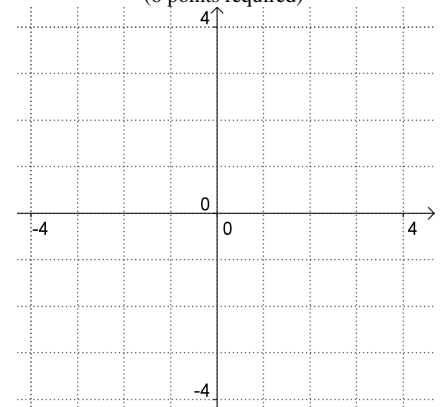
Domain:

Range:

Eqs of asymptotes

$$f(x) = x^{-2}$$

(6 points required)



Domain:

Range:

Eqs of asymptotes

## Trigonometric functions

It helps to remember that all trig functions are positive for  $0 < x < \pi$  (corresponds to the 1<sup>st</sup> quadrant in the unit circle). Graph two periods.

$f(x) = \sin(x)$     Domain:                      Range:  
(4 points per period required)

$f(x) = \cos(x)$     Domain:                      Range:  
(4 points per period required)

$f(x) = \csc(x)$     Domain:                      Range:  
(6 points per period required)

$f(x) = \sec(x)$     Domain:                      Range:  
(6 points per period required)

$f(x) = \tan(x)$     Domain:                      Range:  
(3 points per period required)

$f(x) = \cot(x)$     Domain:                      Range:  
(3 points per period required)

## Exponential and logarithmic functions

It helps to remember that these are inverses of one another.

$f(x) = b^x$ , where  $0 < b < 1$   
(use  $b = 1/2$ ; 3 pts required)    Domain:                      Range:  
Eq of asymptote:

$f(x) = b^x$ , where  $b > 1$   
(use  $b = 2$ ; 3 pts required)    Domain:                      Range:  
Eq of asymptote:

$f(x) = \log_b x$ , where  $b > 1$   
(use  $b = 2$ ; 3 pts required)    Domain:                      Range:  
Eq of asymptote:

$f(x) = e^x$   
(3 pts. required)    Domain:                      Range:  
Eq of asymptote:

$f(x) = \ln x$   
(3 pts. required)    Domain:                      Range:  
Eq of asymptote:

$f(x) = \log x$   
(3 pts. required)    Domain:                      Range:  
Eq of asymptote: