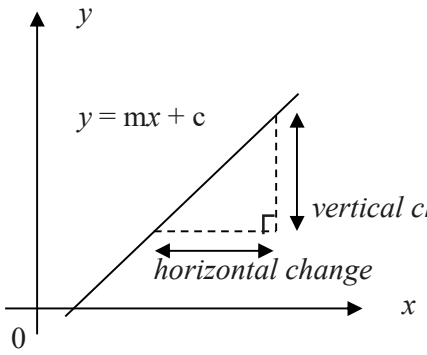
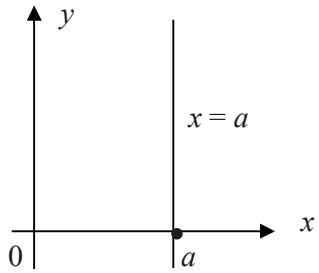
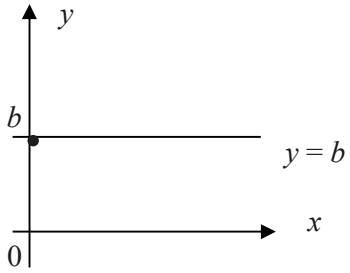
Chapter 5: Graphs

Straight Line Graphs ($y = mx + c$, $x = a$, $y = b$)



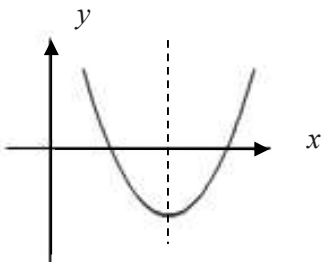
$$\text{gradient} = \frac{\textit{vertical change}}{\textit{horizontal change}}$$



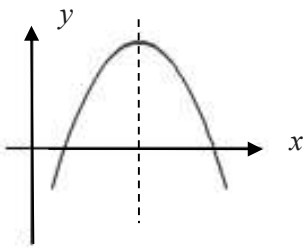


Quadratic Graphs

(a) $y = ax^2 + bx + c$ where a, b and c are constants and $a \neq 0$



$a > 0$



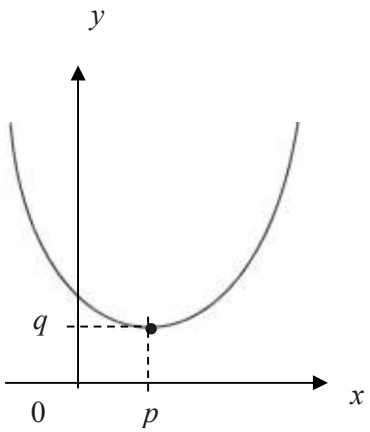
$a < 0$

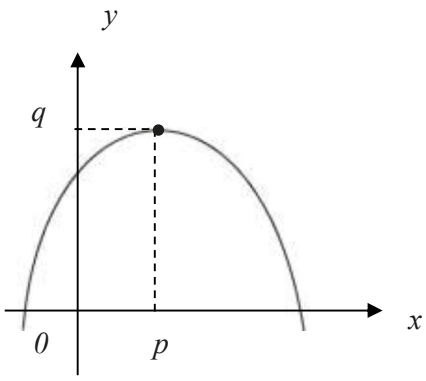
If $a > 0$, the graph has a minimum point

If $a < 0$, the graph has a maximum point

The graph of $y = ax^2 + bx + c$ has an axis of symmetry which passes through the minimum or maximum point.

(b) $y=(x-p)^2+q$ $y=-(x-p)^2+q$





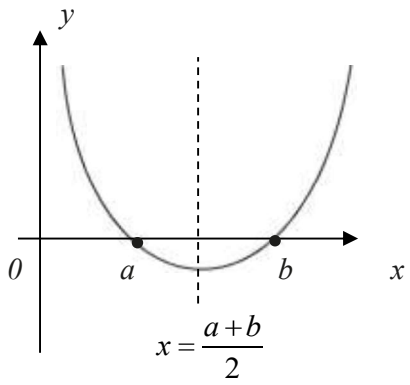
minimum point at (p, q) maximum point at (p, q)

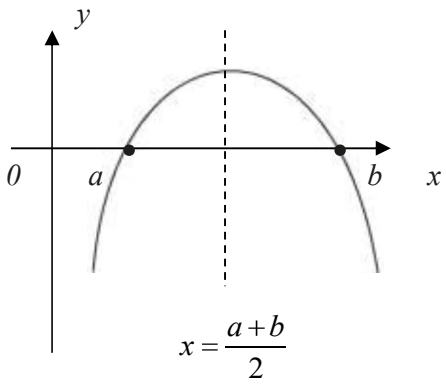
To find the x – intercepts, let $y = 0$

To find the y – intercepts, let $x = 0$

The line of symmetry of the graph in the form $y=\pm(x-p)^2+q$ is $x=p$.

(c) $y=(x-a)(x-b)$ $y=-(x-a)(x-b)$



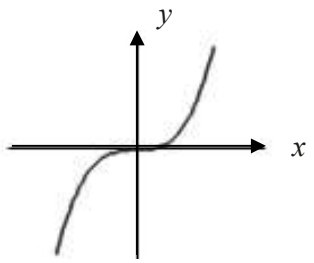


x–intercept are x = a and x = b

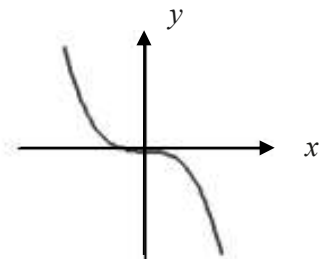
The line of symmetry of the graph in the form $y=\pm(x-a)(x-b)$ is $x=\frac{a+b}{2}$.

Cubic Graphs

$y = ax^n$, *when* $n = 3$, $a \neq 0$



a > 0

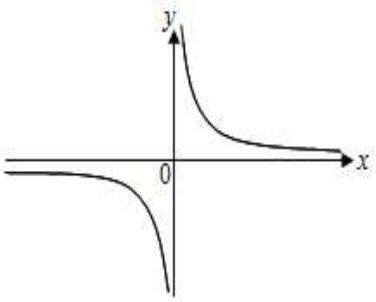


a < 0

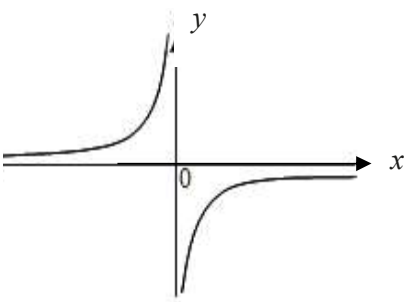
Reciprocal Graphs

$y = ax^{-1}$, *when* $n = -1$, $a \neq 0$

a > 0

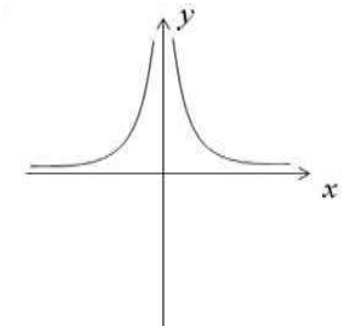


a < 0

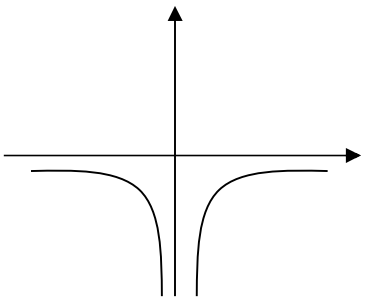


$y = ax^{-2}$, *when* $n = -2$, $a \neq 0$

a > 0

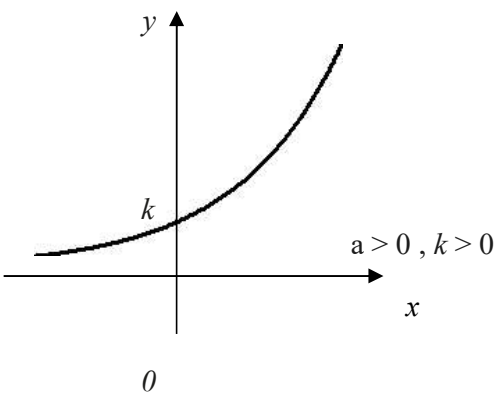


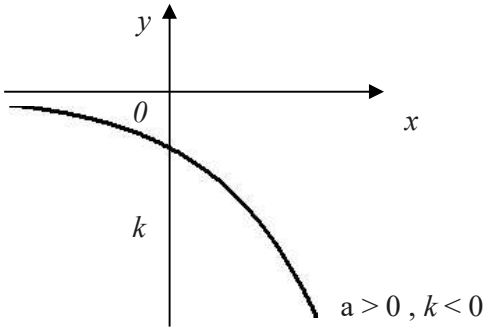
a < 0



Exponential Graphs

$y = ka^x$, where a is a positive integer

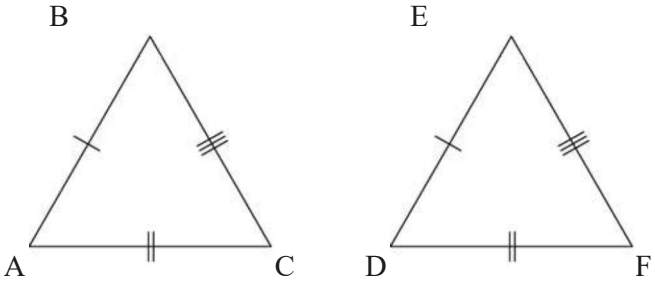




Chapter 6: Congruence and Similarity

Tests of Congruency

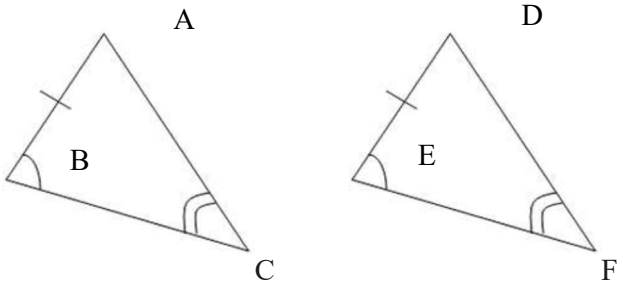
1. Side – Side – Side



$\angle A = \angle D$ $AB = DE$
$\angle B = \angle E$ $BC = EF$
$\angle C = \angle F$ $AC = DF$

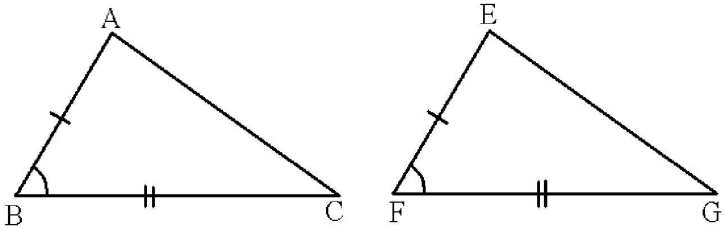
So $\Delta ABC \cong \Delta DEF$ (SSS Rule)

2. Angle – Side – Angle



Let $BC = EF$, $\angle B = \angle E$, $AB = DE$, $\angle C = \angle F$
So $\Delta ABC \cong \Delta DEF$ (ASA Rule)

3. Side – Angle – Side



$AB = EF$
$\angle ABC = \angle EFG$
$BC = FG$

So $\Delta ABC \cong \Delta EFG$ (SAS Rule)