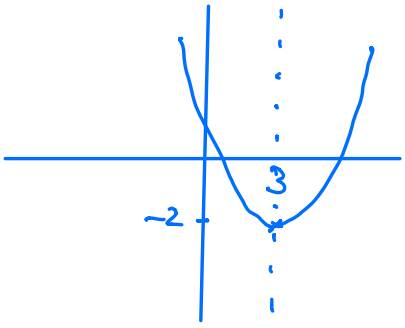
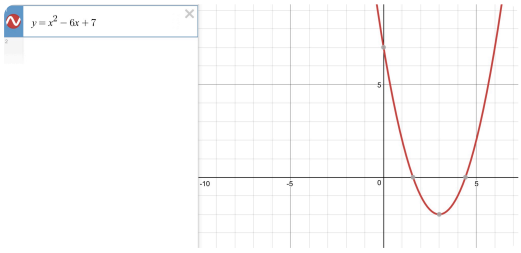
Completing the Square

$y = x^2 - 6x + 7$

$y = (x-3)^2 + 7 - 9$

$y = (x-3)^2 - 2$





Line of symmetry $x = 3$

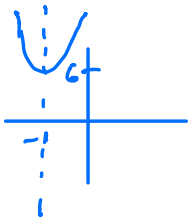
Minimum point $(3, -2)$

Exercise

1) $y = x^2 + 2x + 7$

$y = (x+1)^2 + 7 - 1$

$y = (x+1)^2 + 6$



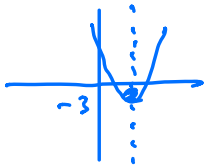
Line of symmetry $x = -1$

Minimum point $(-1, 6)$

2) $y = x^2 - 4x + 1$

$y = (x-2)^2 + 1 - 4$

$y = (x-2)^2 - 3$



Line of symmetry $x = 2$

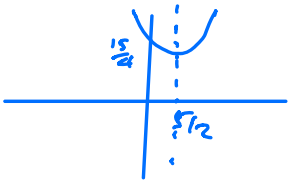
Min point $(2, -3)$

3) $y = x^2 - 5x + 10$

$y = (x - \frac{5}{2})^2 + 10 - \frac{25}{4}$

$y = (x - \frac{5}{2})^2 + \frac{40}{4} - \frac{25}{4}$

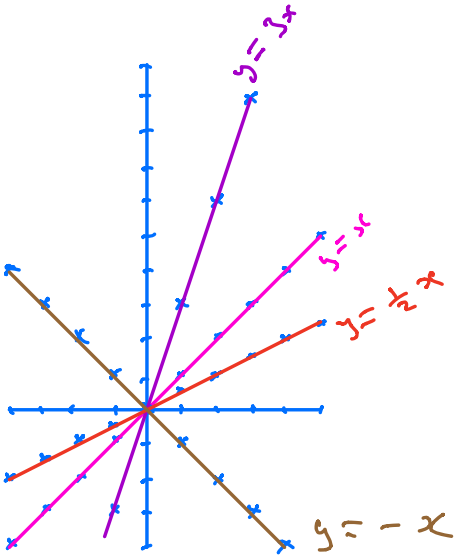
$y = (x - \frac{5}{2})^2 + \frac{15}{4}$

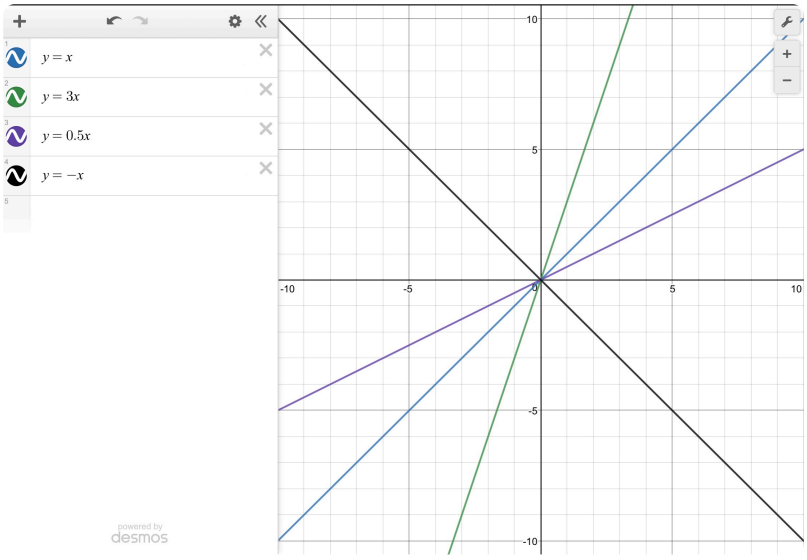


Line of symmetry $x = \frac{5}{2}$

Min point $(5/2, 15/4)$

Review of Straight Line Graphs





$y = mx$ m is the gradient

$m = 0$ horizontal line

$0 < m < 1$ forward slope less than 45° with horizontal

$m = 1$ forward slope 45° to both axes

$m > 1$	forward slope at angle more than $45°$ with horizontal
$-1 < m < 0$	backward slope less than $45°$ with horizontal
$m = -1$	backward slope $45°$ with both axes
$m < -1$	backward slope more than $45°$ with horizontal

$y = mx + c$

This is the standard form of a straight line

$y = mx + c$

m: gradient

c: y-intercept