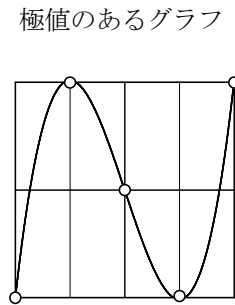
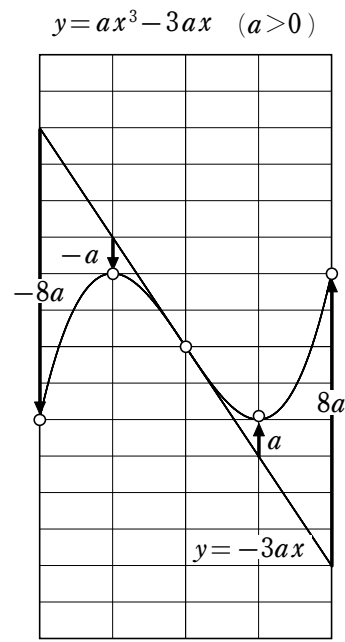
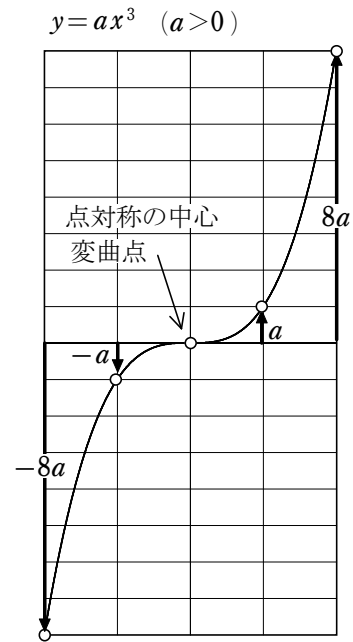


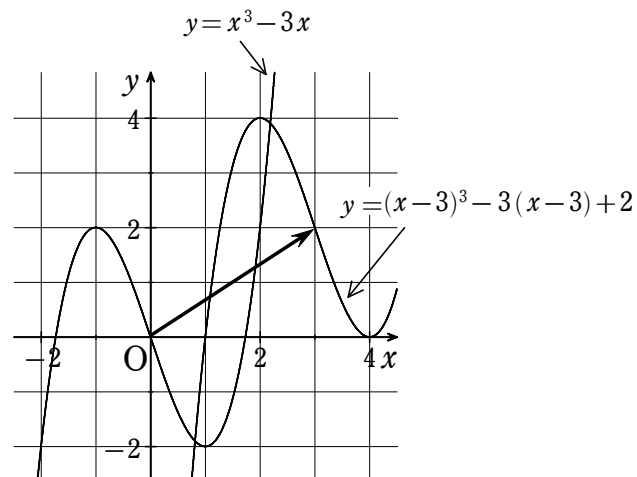
3次関数のグラフの概形

■ x^3 に比例するとは

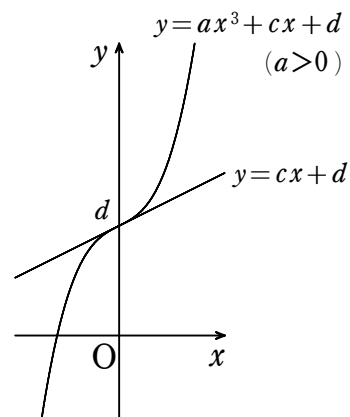


■ すべての3次関数のグラフは $y = ax^3 + cx$ の平行移動

例 $y = x^3 - 9x^2 + 24x - 16$
 $= (x-3)^3 - 3(x-3) + 2$

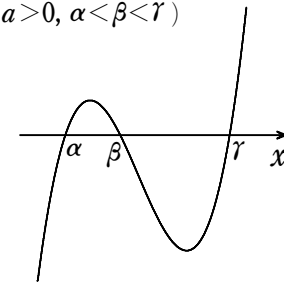


■ $y = ax^3$ と $y = cx + d$ の和とみなす

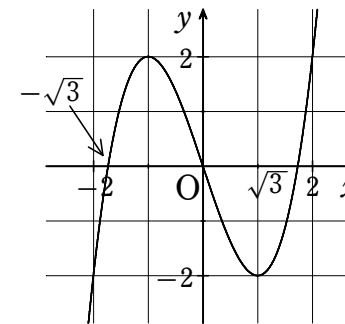


■ 因数分解形を利用する

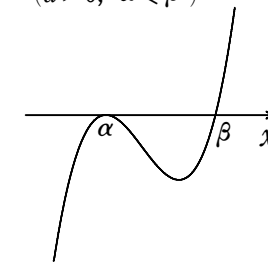
$y = a(x-\alpha)(x-\beta)(x-\gamma)$
 $(a > 0, \alpha < \beta < \gamma)$



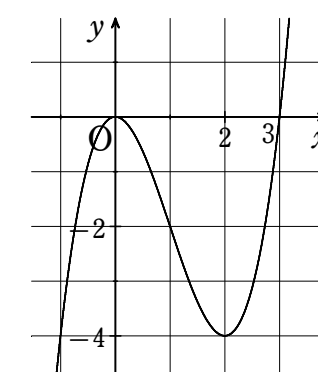
例 (1) $y = x^3 - 3x$
 $= x(x + \sqrt{3})(x - \sqrt{3})$



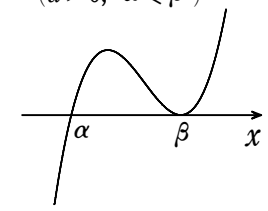
$y = a(x-\alpha)^2(x-\beta)$
 $(a > 0, \alpha < \beta)$



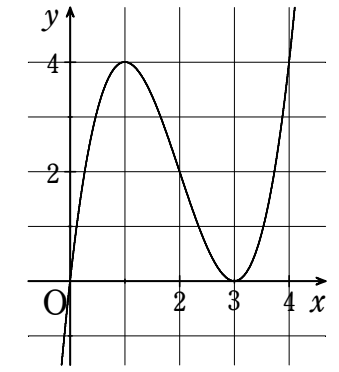
(2) $y = x^3 - 3x^2$
 $= x^2(x-3)$



$y = a(x-\alpha)(x-\beta)^2$
 $(a > 0, \alpha < \beta)$



(3) $y = x^3 - 6x^2 + 9x$
 $= x(x-3)^2$



(4) $y = -x^3 + 3x^2 - 2$ $y = -x^2(x-3)$ を
 $= -x^2(x-3) - 2$ y 方向へ -2 だけ平行移動

