DISCRIMINANT
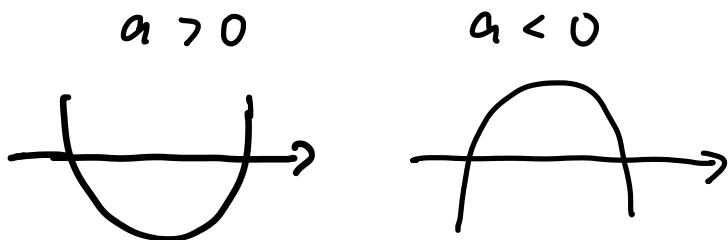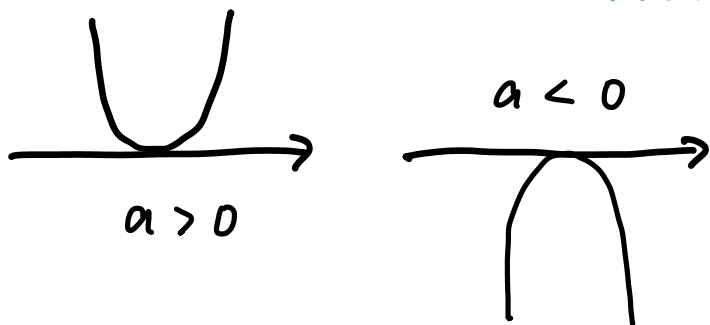
Nature of roots

① $b^2 - 4ac > 0$ 2 distinct and real roots

a > 0   a < 0

② $b^2 - 4ac = 0$ 2 real & equal roots

a > 0   a < 0
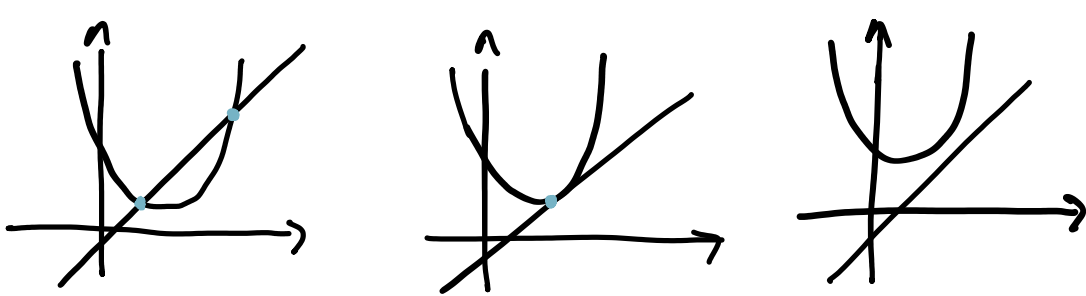

③ $b^2 - 4ac < 0$ no real roots

a > 0   a < 0
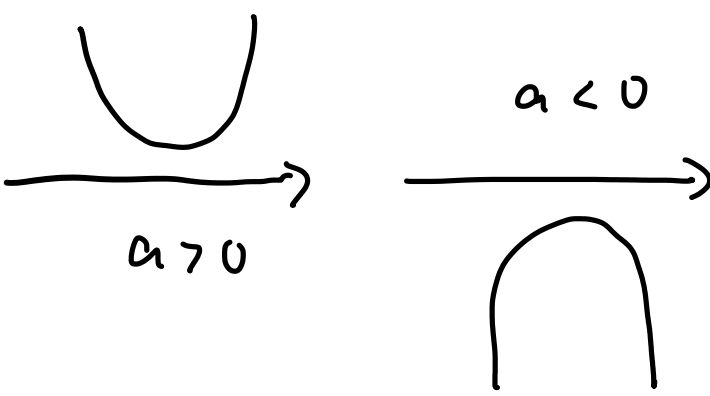
Equation is always positive / negative

} real roots

Intersections

2 intersections   1 intersection   no intersection

2 distinct real roots   2 real and equal roots   no real roots

$D > 0$ $D = 0$ $D < 0$

"intersects, meets at 2 points"   "tangent"