Work sheet 3 :- (A cube is equal to sides plus a number.)

Student number:- Grade :-

Name:-

①. Hyperbola:-

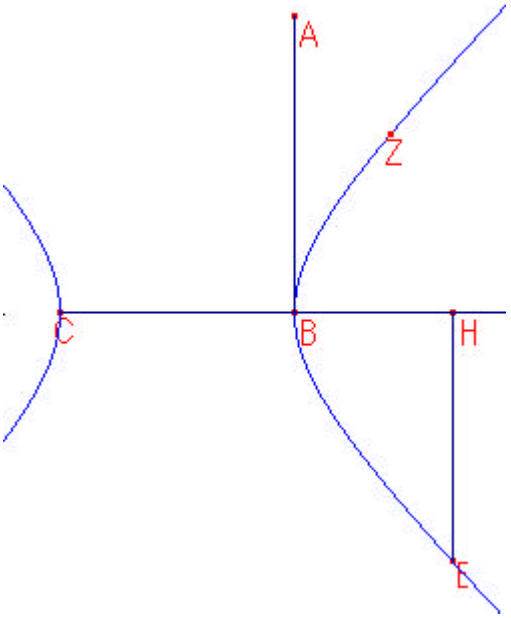
ZBE is a hyperbola whose vertex at the point B.

EH = ordinate

BH = diameter

CH = parameter

$EH^2 = BH.CH$



2. A cube is equal to sides plus a number.

$AB=\sqrt{b}$

$AB^2=b$

$AB^2.BC = a$

DBE is a parabola whose vertex at the point B.

TE= ordinate

AB= parameter

BT= diameter

$TE^2 = AB.BT$

ET:AB=BT:ET

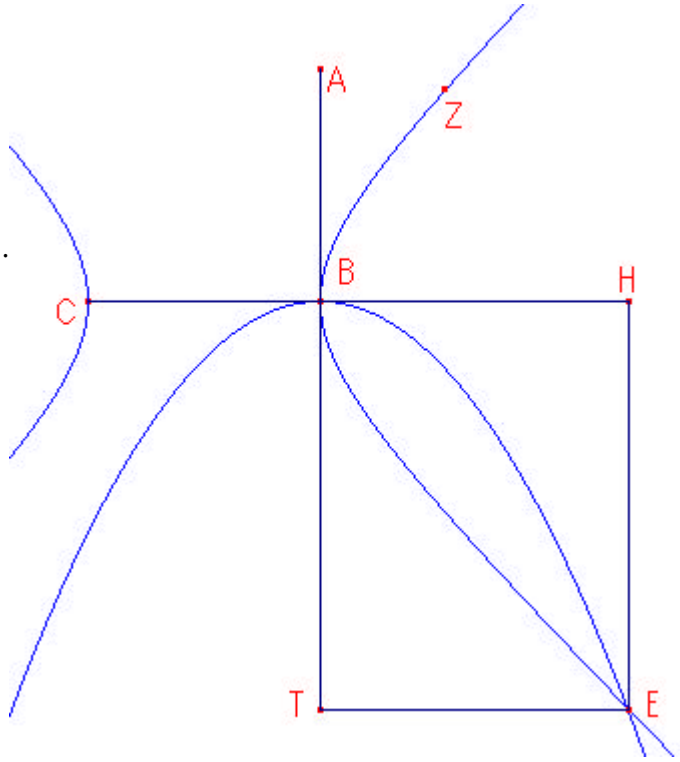
ZBE the hyperbola vertex at the point B.

EH = ordinate

BH= diameter

CH=parameter

$EH^2=BH.CH$



CH:EH=EH:BH

This two conics necessarily intersect at the

Point E.

Now $ET \perp BTandEH \perp BH$

TE= BH and EH= BT

Now from the definition of parabola we get

BH:AB=BT:BH

$$\frac{BH}{AB} = \frac{BT}{BH} \text{----------1}$$

and from the definition of hyperbola we get

CH:EH-EH:BH

CH:BT=BT:BH

$$\frac{BT}{BH} = \frac{CH}{BT} \text{----------2}$$

Now from 1 and 2

$$\frac{BH}{AB} = \frac{BT}{BH} = \frac{CH}{BT}$$

$$\frac{BH^2}{AB^2} = \frac{BT}{BH} \cdot \frac{CH}{BT}$$

$$\frac{BH^2}{AB^2} = \frac{CH}{BH}$$

$$BH^3 = AB^2 \cdot CH$$

$BH^3 = AB^2 (HB + BC)$

$BH^3 = AB^2 \cdot HB + AB^2 \cdot BC$

Set HB = x

$$x^3 = bx + a$$

$$\therefore x^3 = bx + a$$