Work Sheet book 2: (A cube and a number are equal to sides.)

Student no. Grade:

Name:

1. Hyperbola :

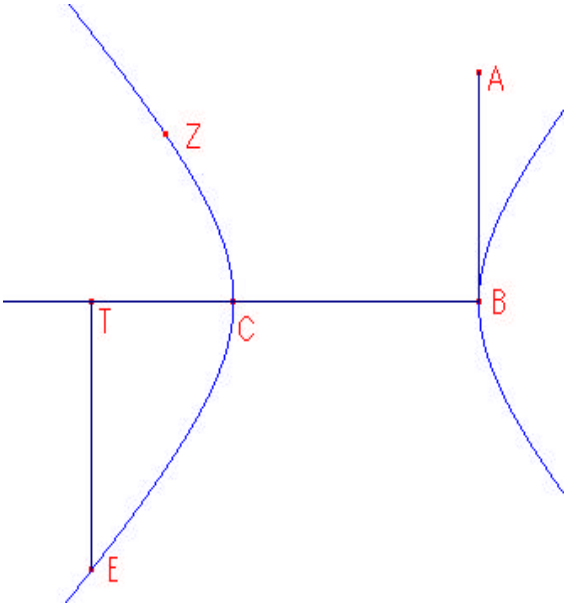
ZCE is a hyperbola at vertex C.

ET = ordinate

TC = diameter

BT = parameter

$ET^2 = TC \cdot BT$



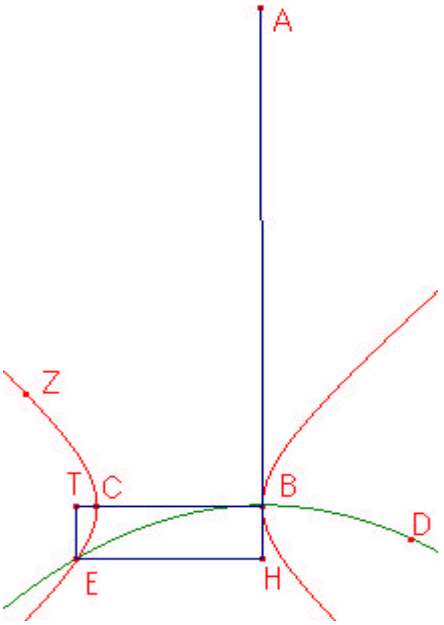
2. A cube and a number are equal to sides i.e. $x^3 + a = bx$.

$AB = \sqrt{b}$

$AB^2 = b$

$AB^2\ BC = a$

$BC = \frac{a}{b}$



DBE parabola vertex at a point B .

EH = ordinate

BH = diameter

AB = parameter

$EH^2 = AB.BH$

AB: EH= EH: BH

ECZ is a hyperbola at vertex C.

ET = ordinate

BT = parameter

TC = diameter

ET^2 = BT. TC

BT: ET = ET :TC

Let the two conics necessarily intersect at the point E

Then $ET \perp BTandEH \perp BH$

EH = BT、and BH=ET

Now from the definition of parabola

AB: BT = BT: ET

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

and from the definition of hyperbola

BT : ET = ET :TC

$$\frac{BT}{ET} = \frac{ET}{TC} \text{----------2}$$

Now from 1 and 2 we get

$$\frac{AB}{BT} = \frac{BT}{ET} = \frac{ET}{TC}$$

$$\left(\frac{AB}{BT}\right) = \frac{BT}{ET} \cdot \frac{ET}{TC}$$

$$\Rightarrow \frac{AB^2}{BT^2} = \frac{BT}{TC}$$

$$BT^3 = AB^2 \cdot TC$$

$$BT^3 + AB^2 \cdot BC = AB^2 \cdot TC + AB^2 \cdot BC$$

$$BT^3 + AB^2 \cdot BC = AB^2 \cdot BT$$

$$\Theta\ BC + BT = BT$$

$$Nowset BT = x$$

$$x^3 + b \cdot \frac{a}{b} = b \cdot x$$

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