

$$9. \sin A = \frac{2a}{abc} \sqrt{s(s-a)(s-b)(s-c)}$$

$$\therefore L \sin A = \log. 2 + \frac{1}{2} \log. S + \frac{1}{2} \log. (s-a) + \frac{1}{2} \log. (s-b) + \frac{1}{2} \log. (s-c) + \text{colog. } a + \text{colog. } b + \text{colog. } c - 20 + \log. a$$

$$= 6.80038 + \log. a$$

$$L \sin B = 6.80038 + \log. b$$

$$L \sin C = 6.80038 + \log. c$$

thus:

s	2045	3	31069	log.
$s-a$	782	2	89321	"
$s-b$	686	2	83632	"
$s-c$	577	2	76118	"

$$2 \} 11.80140$$

$$5.90070$$

$$a \quad 1263 \quad 6.89860 \quad \text{colog.}$$

$$b \quad 1359 \quad 6.86678 \quad "$$

$$c \quad 1468 \quad 6.83327 \quad "$$

$$\log. 2 = .30103$$

$$2, 6.80038$$

$$\log. a = 3.10140$$

$$9.90178$$

$$\therefore A = 52^\circ 54'$$

$$\text{again } 6.80038$$

$$\log b = 3.13322$$

$$9.93360$$

$$\therefore B = 59^\circ 7'$$

$$\text{also } 6.80038$$

$$c = 3.16673$$

$$9.96711$$

$$\therefore C = 67^\circ 59'$$

$$(ii) L \sin B = \log b + L \sin A + \text{colog } a - 10$$

$$= 9.95745$$

$$= L \sin 65^\circ 3'$$

$$\therefore B = 65^\circ 3'$$

$$C = 180 - A - B = 46^\circ 58'$$

$$\log c = \log a + L \sin C - L \sin A$$

$$= 3.31069 + 9.86389$$

$$+ .03289 - 10$$

$$= 3.20747 = \log 16124$$

$$\therefore c = 16124$$

$$10. \text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

$$\therefore \log. \text{area} = \frac{1}{2} \{ \log. s + \&c. \}$$

$$= 5.90070$$

$$\therefore \text{area} = 795610$$

$$(ii) \text{Area} = \frac{1}{2} ac \sin B$$

$$\log. \text{area} = \log. a + \log c + L \sin B$$

$$+ \text{colog } 2 - 20$$

$$= 6.17458$$

$$\therefore \text{area} = 1494800$$

$$11. \text{Let } x = \text{height of the tower,}$$

$$\text{then } \frac{x}{x+60} = \tan 30^\circ = \frac{1}{\sqrt{3}}$$

$$\therefore x = 30(\sqrt{3} + 1) = 81.96.$$

ALGEBRA.

$$2. 1296 - (5x + 5y + 13z)^2;$$

$$3 + 3 = 1$$

$$3. (1). 2c - a - 10b$$

$$(2). 13a - 20b + 24c$$

$$4. (3). \frac{x^{3n}}{x^n - 1} - \frac{1}{x^n - 1} - \frac{x^{2n}}{x^n + 1} + \frac{1}{x^n + 1}$$

$$= \frac{x^{3n} - 1}{x^n - 1} - \frac{x^{2n} - 1}{x^n + 1}$$

$$= \frac{x^{2n} + x^n + 1 - x^n + 1}{x^n - 1}$$

$$= \frac{x^{2n} + 2}{x^n - 1}$$

$$5. \begin{array}{r|l} 1 & 4 - 7 + 25 - 15 + 8 + 10 \\ 1 & 4 - 3 + 2 \quad 2 \\ -5 & -20 + 15 - 10 - 10 \end{array}$$

$$4 - 3 + 2 + 2$$

$$\therefore \text{quot.} = 4x^3 - 3x^2 + 2x + 2$$

$$\begin{array}{r|l} 2 & 6 - 1 + 2 + 13 + 4 \\ 3 & 9 + 12 + 3 \\ -4 & -12 - 16 - 4 \end{array}$$

$$3 + 4 + 1$$

$$\therefore \text{quot.} = 3a^2 + 4ab + b^2$$

$$7. (1). (12 + x)^{\frac{1}{2}} = 2 + x^{\frac{1}{2}}$$

square both sides, then

$$12 + x = 4 + 4x^{\frac{1}{2}} + x$$

$$\therefore x^{\frac{1}{2}} = 2, \therefore x = 4$$

$$(2). \text{Multiply thro' by 2 and we have}$$

$$x - \frac{4x - 6 - 3x + 1}{x - 1} = 3 \frac{x^2 + 2}{3x - 2}$$

$$x - \frac{x - 5}{x - 1} = x + \frac{2x + 6}{3x - 2}$$

$$\therefore 5x^2 - 13x + 4 = 0$$

$$\therefore x = \frac{13 \pm \sqrt{89}}{10}$$