[176r] [diagram] $(a-x)x \quad ax-x^2$

[further diagrams: one Pythagoras-related]

[176v] [Königsberg bridges diagrams, some with labels in Babbage's hand]

[Pythagoras-related diagrams]

[177r] [further Königsberg bridges diagrams and related jotting]

[in Babbage's hand] 1 No return
3
5

If there are an odd N° of Bridges 2 No ending except
if you do not begin you must end 4 in island
in it

[written at 90°, spanning bottom of 176v and 177r]

2	9	4
7	5	3
6	1	8

[177v]

$\sin\frac{1}{2}a = \sqrt{\frac{1}{2}R^2 - \frac{1}{2}R\cos a}$

for $\cos a$ put $\pm\sqrt{R^2-\sin^2 a}$

$\sin\frac{1}{2}a = \sqrt{\frac{1}{2}R^2 \mp \frac{1}{2}R\sqrt{R^2-\sin^2 a}}$

$(a\pm b)^2 = a^2+b^2\pm 2ab$

$(a-b)\times(a+b)$

$= a^2-b^2$

Let $\sin\frac{1}{2}a = \frac{1}{2}\sqrt{R^2+R\sin a} \mp \frac{1}{2}\sqrt{R^2-R\sin a}$

$\frac{1}{2}R^2 \mp \frac{1}{2}R\sqrt{R^2-\sin^2 a} =$

$= \frac{1}{4}R^2 + \frac{1}{4}R\sin a \quad + \frac{1}{4}R^2 - \frac{1}{4}R\sin a \mp 2\times\frac{1}{2}\times\frac{1}{2}\sqrt{R^2+R\sin a}\times\sqrt{R^2-R\sin a}$

$\mp\frac{1}{2}R\sqrt{R^2-\sin^2 a} = \mp\frac{1}{2}\sqrt{R^2+R\sin a}\times\sqrt{R^2-R\sin a}$

$= \mp\frac{1}{2}\sqrt{R^4-R^2\sin^2 a} = \mp\frac{1}{2}R\sqrt{R^2-\sin^2 a}$

$\mp\frac{1}{2}R\sqrt{R^2-\sin^2 a} = \mp\frac{1}{2}R\sqrt{R^2-\sin^2 a}$