XXII. On the circle, the sphere, the square, and the equilateral triangle

Mr. James Utting

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XXII. *On the Circle, the Sphere, the Square, and the equilateral Triangle.* By Mr. JAMES UTTING.

To Dr. Tilloch.

DEAR SIR, — SHOULD the following statement relative to the sides and areas of the $\odot$, $\square$, and equilateral $\triangle$, &c. be thought worthy a place in the Philosophical Magazine, it is at your service.

Circumference of a $\odot$ to diameter unity	} 3.14159,26535,89793,23846
Area of a $\odot$ to diameter unity	} .78539,81633,97448,30962
Solidity of a sphere to diameter unity	} .52359,87755,98298,87308
The diameter of a $\odot = 1$.	
The side of the circumscribed equilateral $\triangle$	} = 1.73205,08075,68877,29353
The diameter of a $\odot = 1$.	
The side of the inscribed equilateral $\triangle$	} = .86602,54037,84438,64676
The diameter of a $\odot = 1$.	
The side of an equilateral $\triangle$ of equal area	} = 1.34677,36870,886
The diameter of a $\odot = 1$.	
The side of a $\square$ of the same area	} = .88622,69254,52758,01365
The diameter of a $\odot = 1$.	
The side of the inscribed $\square$	} = .70710,67811,86547,52440
The side of a $\square = 1$.	
The diameter of the circumscribed $\odot$	} = 1.41421,35623,73095,04880
The side of a $\square = 1$.	
The side of the circumscribed $\triangle$	} = 2.15470,05383,79251,52902
The side of a $\square = 1$.	
The side of an equilateral $\triangle$ of the same area	} = 1.51967,13713,03185,09466
The side of an $\triangle = 1$.	
The diameter of its inscribed $\odot$	} = .57735,02691,89625,76451
The side of an $\triangle = 1$.	
The diameter of its circumscribed $\odot$	} = 1.15470,05383,79251,52902
The side of an $\triangle = 1$.	
The diameter of a $\odot$ of equal area	} = .74251,52492,857

The

The side of an $\triangle = 1$.

The side of the inscribed $\square \dots \dots \dots$ } = .46530,24295,51049,79947

The side of an $\triangle = 1$.

The side of a $\square$ of equal area $\dots \dots$ } = .65803,70064,76246,23041

The side of an $\triangle$ given to find its area $\times$ the $\square$ of the side by } 0.43301,27018,92219,32338

The lines circumscribing a $\square$, and $\odot$, of the same area, are in proportion to each other as 3.54490,77018,11032,05460, to 3.14159, &c. Or, as 1. to .88622,69254,52758,01365.

The lines circumscribing a $\square$, and $\triangle$, of the same area, are as 1. to 1.51967,13713,03185,09466.

The lines circumscribing an $\triangle$, and $\odot$, of the same area, are as 1. to .77756,01507,781066.

The area of a hexagon to that of its circumscribing circle is as 1. to 1.20919,9576156. Or, as .82699,33431,32688 to 1.

Lynn Regis, Nov. 15, 1821.

JAMES UTTING.

ERRATA. — In the Table of the $\odot$'s R.A. in degrees, &c. vol. lvii. page 29 :

Argument.	R.A.	Diff.
^{s.} 1 3 20 for 31 6 11.53		{ 577.72 } 578.39 { read 31 6 11.73 { 577.92 578 19

Argument.	Diff.
^{s.} 1 14 20 } 1 14 30 } 1 14 40 }	for { 597.76 } 597 98 { read { 596.76 596.98

R.A.

^{s.}
1 16 50 for 44 21 44.98 read 44 21 41.98

In the Table of the $\odot$'s R.A. in time, page 184 :

Diff.

^{s.}
0 13 0 }
0 13 10 }

" " " "

for 36.00 read 37.00

In the Reduction of the Ecliptic to the Equator, page 435 :

Argument.	Reduction.
^{s.} 2 3 30 for 2 1 31.97	read 2 1 31.96

The signs, &c. at the bottom of pages 435 and 436 are wrong inserted, they ought to be the same as at the bottom of pages 457 and 438.

In the Table of the Var. of the $\odot$'s R.A. and Decl., page 440 :

Argument.	Var. R.A.
^{s.} 0 7 50 } 1 10 50 }	{ 5.49 Var. Declin. } 61.13 { read { 5.39 62.13