length of array (items):	Algorithm 1	Algoritm 2	Algorithm 3
100	2.7716159821	0.0872612	0.7102489471
200	5.4697990417	0.0882148743	0.7722377777
300	11.5578174591	0.1192092896	1.1301040649
400	20.049571991	0.1575946808	1.9469261169
500	37.1966362	0.1928806305	1.9254684448
600	45.1765060425	0.2381801605	2.3641586304
700	59.3752861023	0.2632141113	2.8069019318
800	82.5231075287	0.3051757813	3.1435489655
900	104.8910617828	0.3345012665	3.5936832428
1000	124.716758728	0.3890991211	4.0917396545
2000	506.4375400543	0.8039474487	9.1133117676
3000	1130.9654712677	1.1386871338	12.9764080048
4000	2003.3891201019	1.6663074493	18.19896698
5000	3167.5834655762	1.9881725311	23.2424736023
6000	4702.143907547	2.5098323822	29.3796062469
7000	6300.3859519959	2.6910305023	32.7661037445
8000	8240.9496307373	3.0426979065	39.7121906281
9000	10258.1548690796	3.4453868866	41.8004989624
10000	12838.2110595703	3.8516521454	46.7867851257

Run Time of Algorithm 1 as a Function of Number of Array Elements

$f(x) = 0.0002132125 \, x^{1.9361128816}$
$R^2 = 0.9967174276$
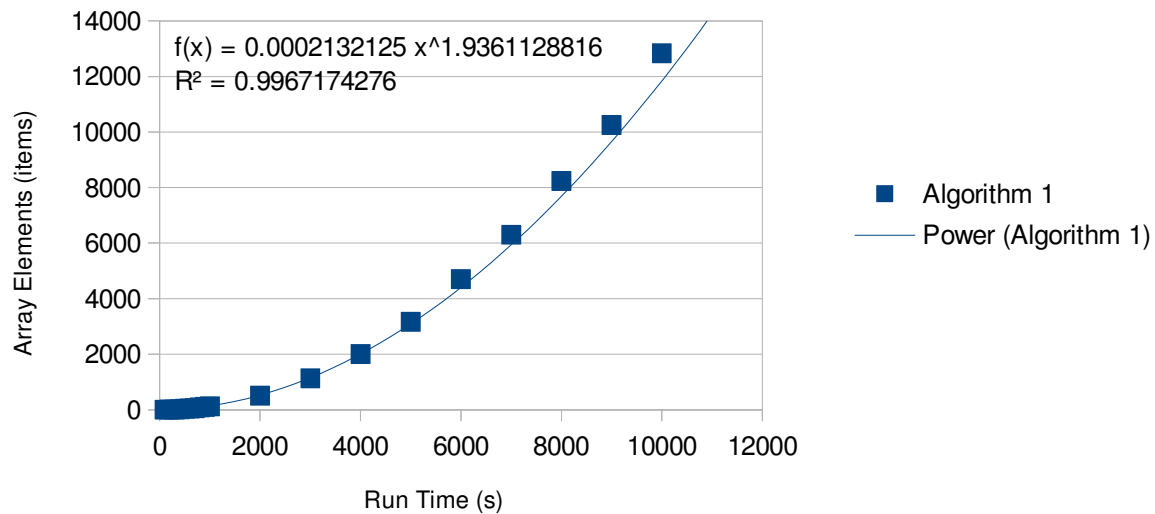
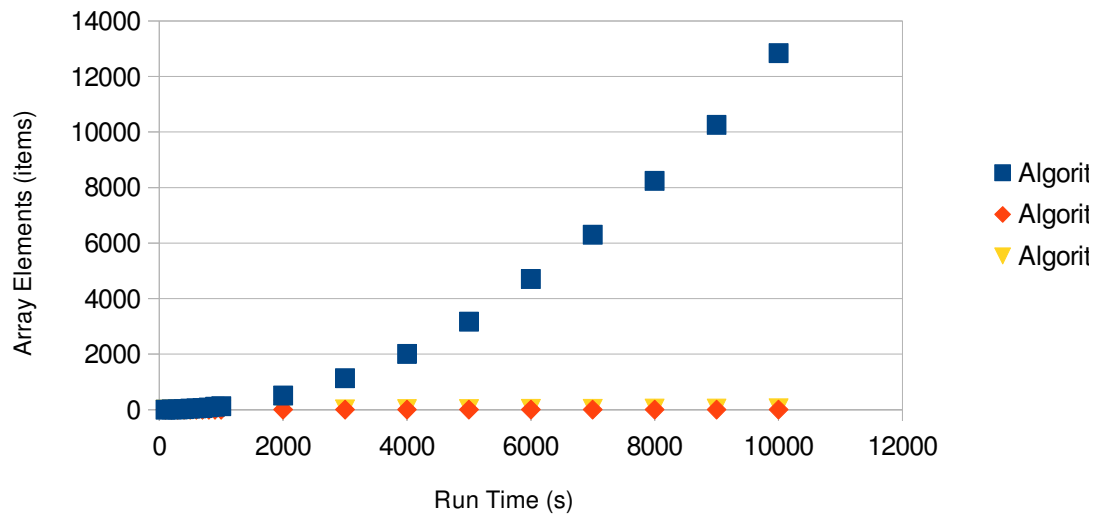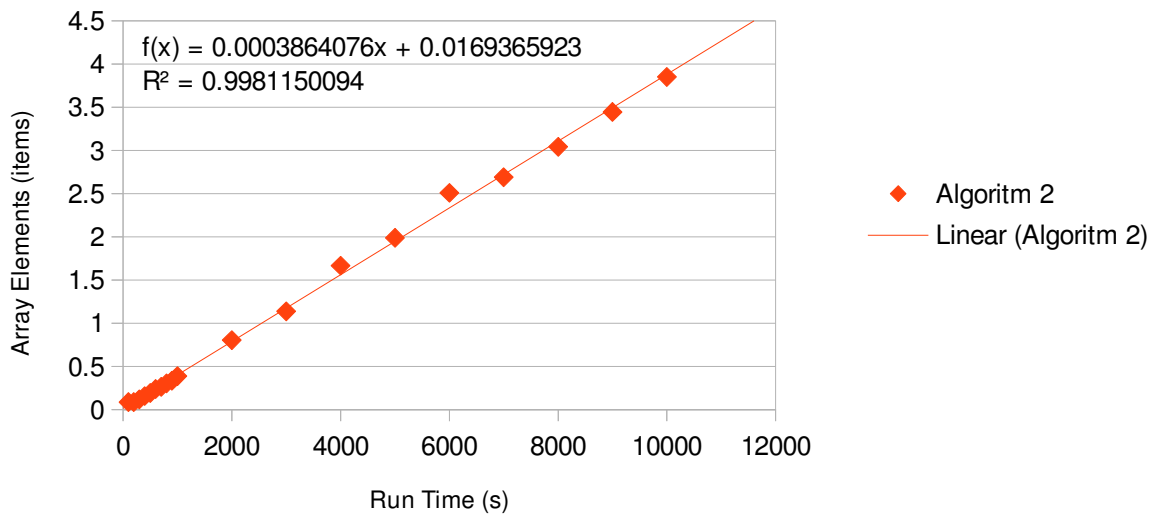|	log log slope	n1	n0	f(n)1
		10000	100	
Algorithm 1		10000	100	12838.2110595703
Algorithm 2		10000	100	3.8516521454

| Algorithm 3 | 10000 | 100 | 46.7867851257 |

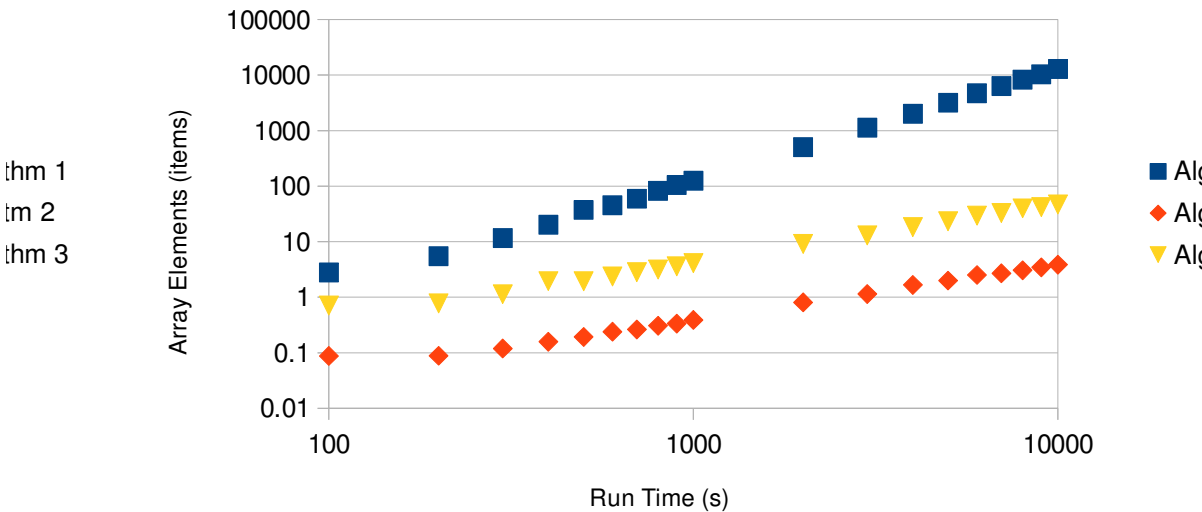## Algorithmic Run Time as a Function of Number of Array Elements

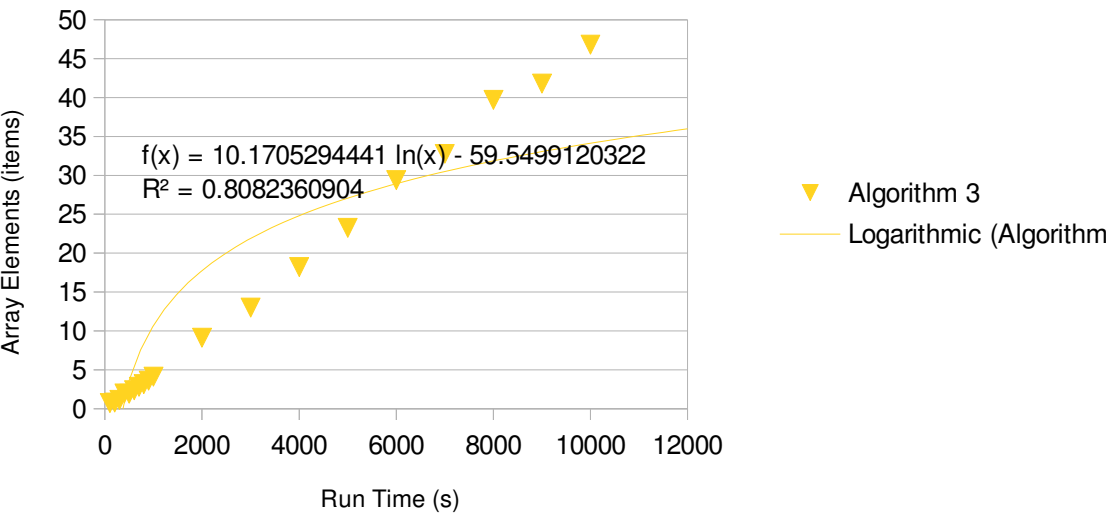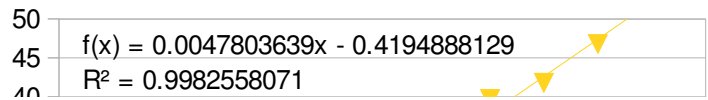## Run Time of Algorithme 2 as a Function of Number of Array Elements

$f(x) = 0.0003864076x + 0.0169365923$
$R^2 = 0.9981150094$

f(n)0	slope
2.771615982	1.832885727
0.0872612	0.822412938

0.710248947 0.909356303

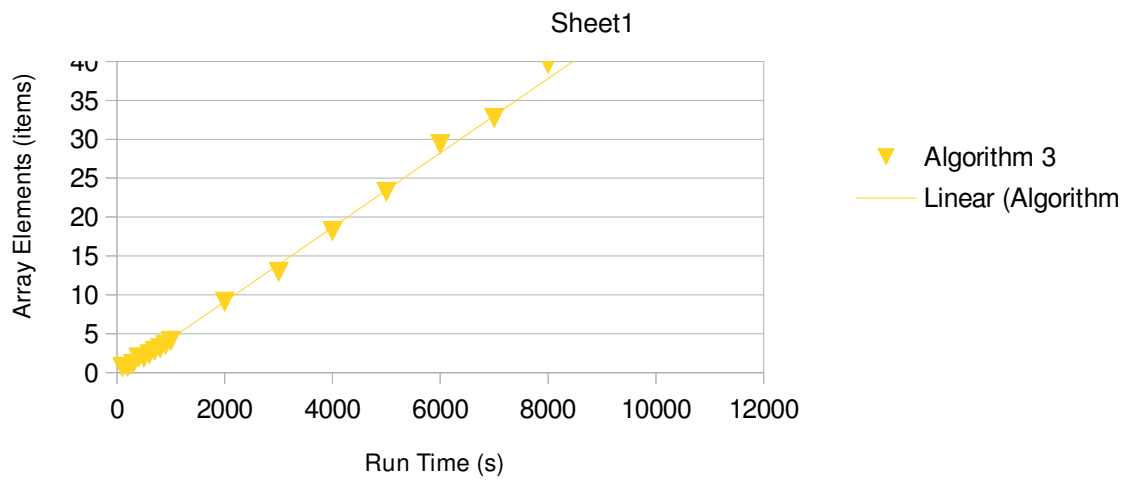## Algorithmic Run Time as a Function of Number of Array Elements, Lo

thm 1

tm 2

thm 3

Array Elements (items)

Run Time (s)

■ Alg
♦ Alg
▼ Alg

Run Time of Algorithm 3 as a Function of Number of Array Elements

$f(x) = 10.1705294441 \ln(x) - 59.5499120322$

$R^2 = 0.8082360904$

Array Elements (items)

Run Time (s)

▼ Algorithm 3
— Logarithmic (Algorithm

Run Time of Algorithm 3 as a Function of Number of Array Elements

$f(x) = 0.0047803639x - 0.4194888129$

$R^2 = 0.9982558071$

Sheet1

Array Elements (items) vs Run Time (s)

▼ Algorithm 3
— Linear (Algorithm

g-Log

gorithm 1
goritm 2
gorithm 3

3)

3)