

Matmul

Size 16

3,101,445	cycles:u	#	1.389 GHz	$2,787,466 / (0.9 * (1.389 \times 10^9)) =$
2,787,466	instructions:u	#	0.90 insn per cycle	0.002
0.006721782 seconds time elapsed				Percent diff = 66.8%

Size 64

171,258,777	cycles:u	#	1.978 GHz	$175,139,462 / (1.02 * (1.978 \times 10^9)) =$
175,139,462	instructions:u	#	1.02 insn per cycle	0.086
0.112350733 seconds time elapsed				Percent diff = 23.41%

Size 256

12,324,562,269	cycles:u	#	1.998 GHz	$11,651,186,702 / (0.95 * (1.998 \times 10^9)) =$
11,651,186,702	instructions:u	#	0.95 insn per cycle	6.138
6.214089248 seconds time elapsed				Percent diff = 1.22%

Size 1024

802,720,065,263	cycles:u	#	1.999 GHz	$771,933,654,950 / (0.96 * (1.999 \times 10^9)) =$
771,933,654,950	instructions:u	#	0.96 insn per cycle	402.24
402.438067137 seconds time elapsed				Percent diff = 0.047%

Matmul-mul

Size 16

818,318	cycles:u	#	0.772 GHz	$418,609 / (0.51 * (0.772 \times 10^9)) =$
418,609	instructions:u	#	0.51 insn per cycle	0.001
0.025521003 seconds time elapsed				Percent diff = 95%

Size 64

11,507,525	cycles:u	#	1.737 GHz	$7,542,391 / (0.66 * (1.737 \times 10^9)) =$
7,542,391	instructions:u	#	0.66 insn per cycle	0.006
0.013643253 seconds time elapsed				Percent diff = 40%

Size 256

1,019,687,691	cycles:u	#	1.990 GHz	$307,530,803 / (0.3 * (1.99 \times 10^9)) =$
307,530,803	instructions:u	#	0.30 insn per cycle	0.51
0.580287840 seconds time elapsed				Percent diff = 11.22%

Size 1024

61,189,583,971	cycles:u	#	1.996 GHz	$17,002,412,259 / (0.28 * (1.996 \times 10^9)) =$
17,002,412,259	instructions:u	#	0.28 insn per cycle	30.42
31.431502522 seconds time elapsed				Percent diff = 3.21%

$(402.43806 / 31.4315) = S$

E=100

Find F

$1 / (1 + (100 - 1)(1 - 12.8)) = -7.89 \times 10^{-4}$