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AMATH 583
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All the plots for the BLAS routines are shown below

daxpy

daxpy_unroll

dgemv

dgemm

axpy

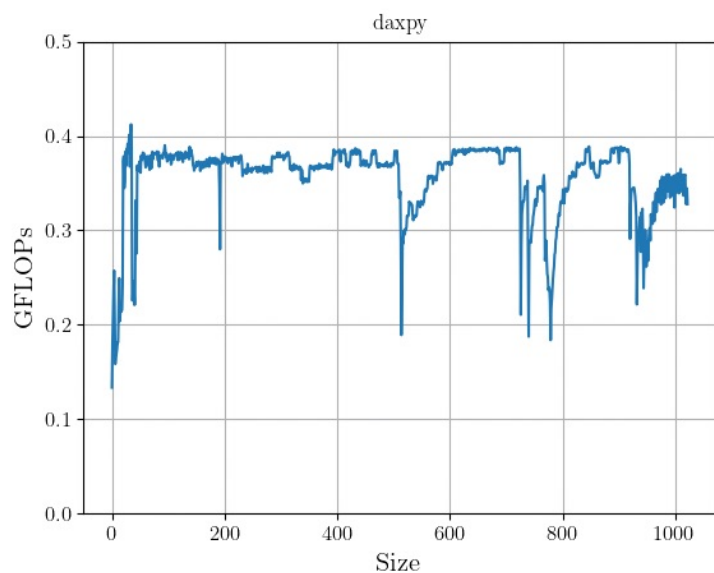GFLOPs vs Size (plot)

gemv

GFLOPs vs Size (plot)

gemm

GFLOPs vs Size (plot)
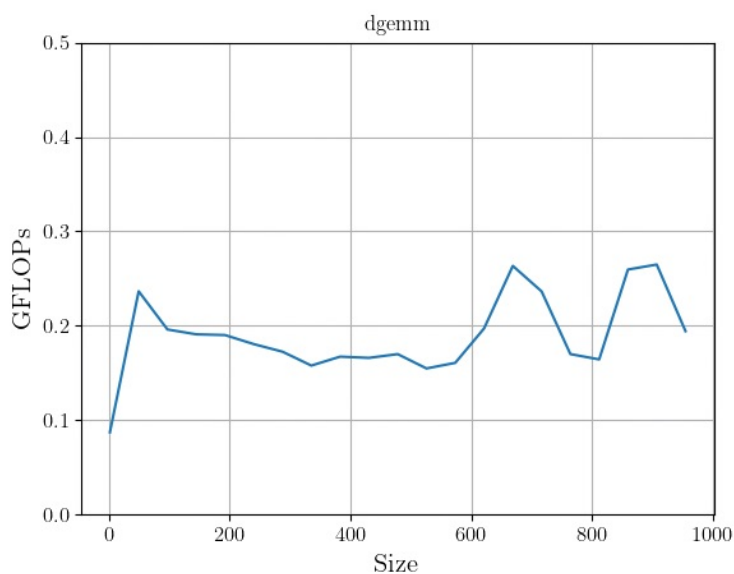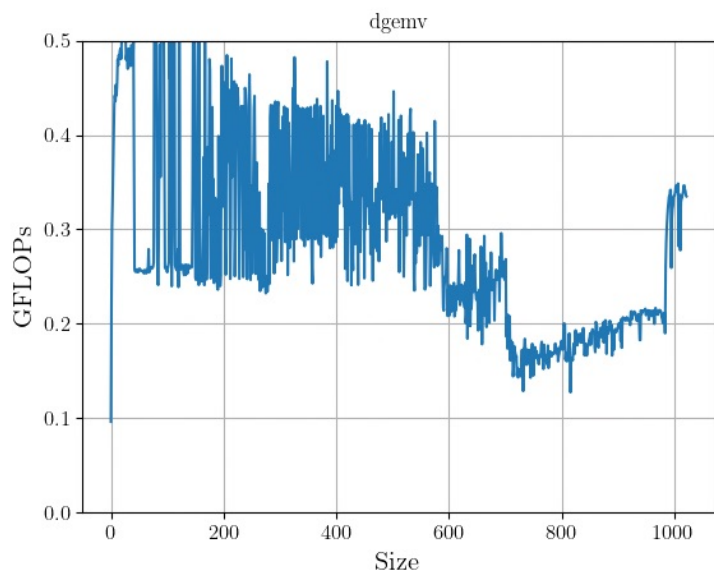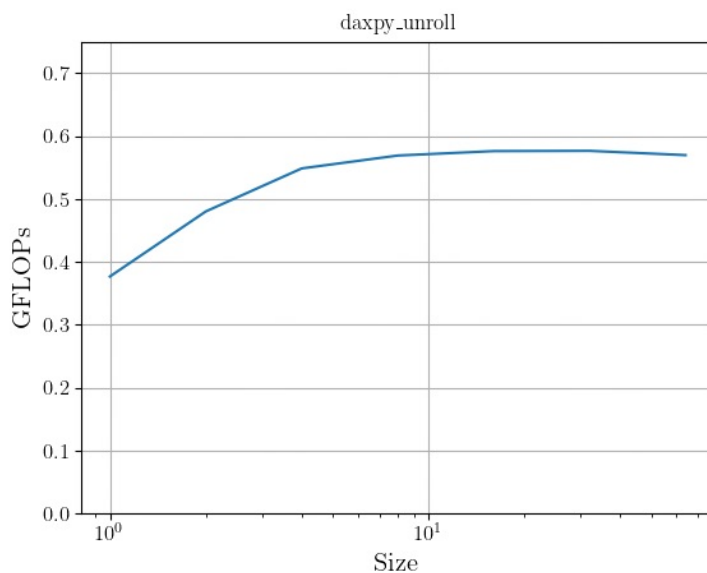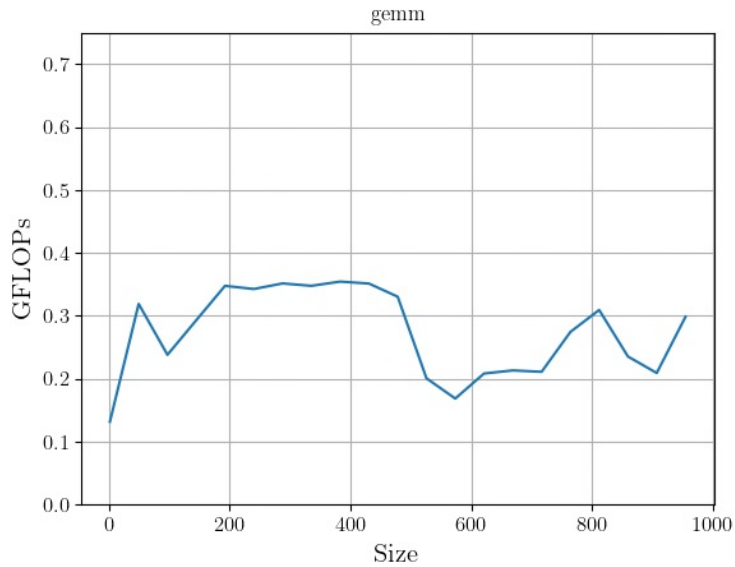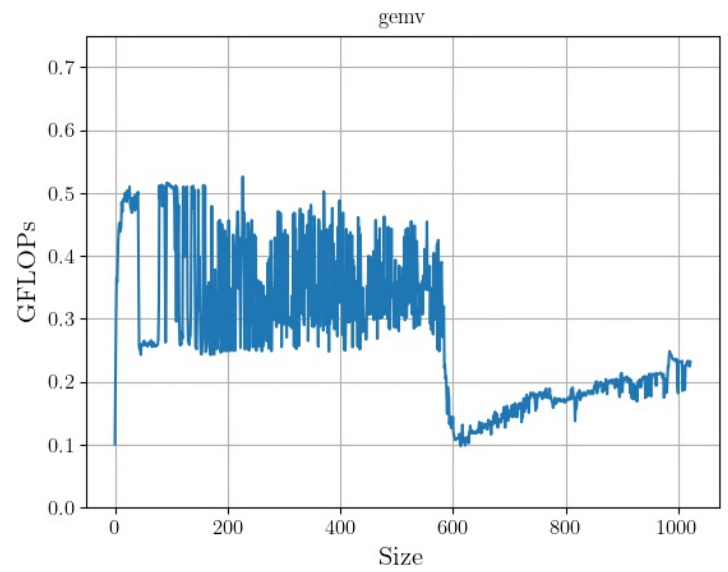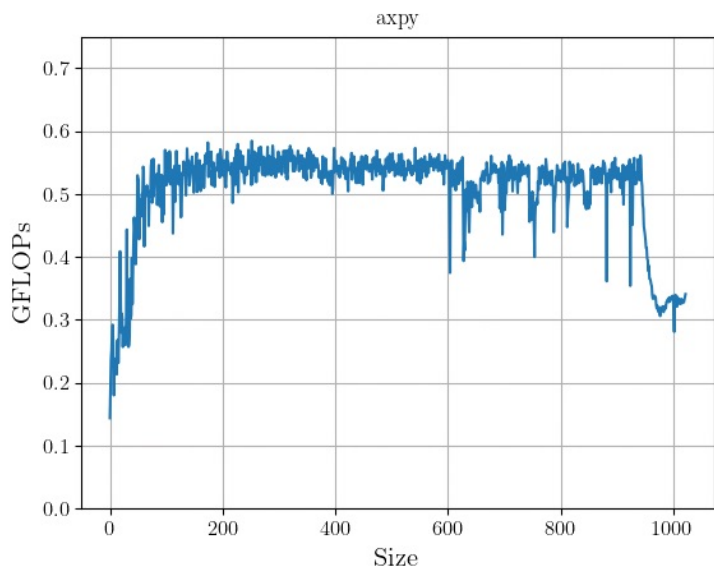
Extra Credit

1. $+\infty = \underbrace{0}_{\substack{\text{sign} \\ \text{bit}}} \underbrace{111}_{\substack{\text{exp} \\ \text{bits}}} \underbrace{00}_{\substack{\text{frac} \\ \text{bits}}}$

$-\infty = \underbrace{1}_{\substack{\text{sign} \\ \text{bit}}} \underbrace{111}_{\substack{\text{exp} \\ \text{bits}}} \underbrace{00}_{\substack{\text{frac} \\ \text{bits}}}$

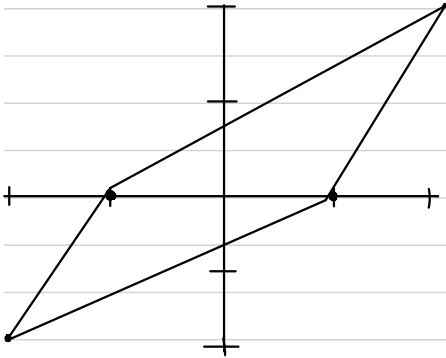2. $\|x\|_1 = \sum_{i=1}^{n} |x_i| \qquad x \in \mathbb{R}^n$

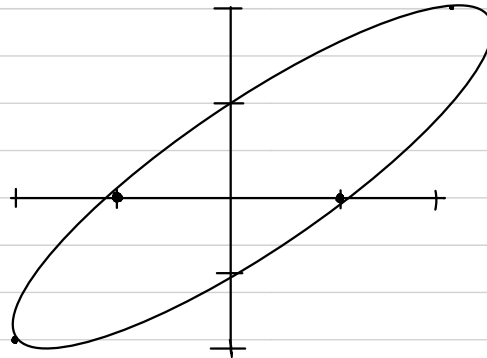$\|x\|_2 = \sqrt{\sum_{i=1}^{n} |x_i|^2}$

$\|x\|_\infty = \max_i |x_i|$

3   Vertices of 1-norm ball are $[\pm 1 \ 0]^T$ and $[0 \ \pm 1]^T$
    These vertices are mapped to $[\pm 1 \ 0]^T$ and $[\pm 2 \ \pm 2]^T$

    The 2-norm ball also passes through these points but the
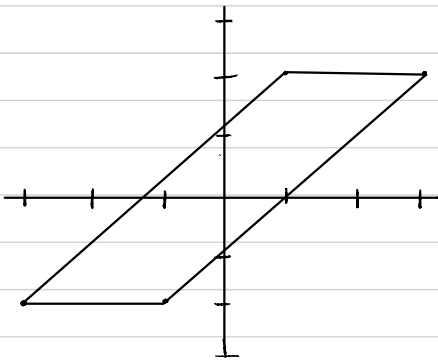   transformed 2-norm ball will be on ellipse

1-norm ball   2-norm ball

Vertices of the ∞ norm ball are $[\pm 1 \ \pm 1], [\pm 1, \mp 1]$
These vertices are mapped to $[3 \ 2]^T, [-3 \ -2]^T, [-1, -2]^T, [1 \ 2]^T$

To map vectors simply multiply
by A

∞ norm ball