

Fall 2021, Math 596: Week 6 Preliminary Problems
Due: Thursday, September 30th, 2021
Polytopes, Polyhedra, and Cones

Preliminary problems. These problems should be completed before discussion on Thursday.

(P1) Draw the convex hull of

$$\{(1, 1), (2, 3), (2, 4), (3, 2), (4, 2), (4, 4)\}$$

in \mathbb{R}^2 . How many vertices does this polytope have?

(P2) Fill in below the H -description of the polytope P drawn in (P1).

$$\begin{pmatrix} \frac{1}{4} & 0 \\ \text{---} & \text{---} \\ \text{---} & \text{---} \\ \text{---} & \text{---} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} \leq \begin{pmatrix} 1 \\ 1 \\ 1 \\ 1 \end{pmatrix}$$