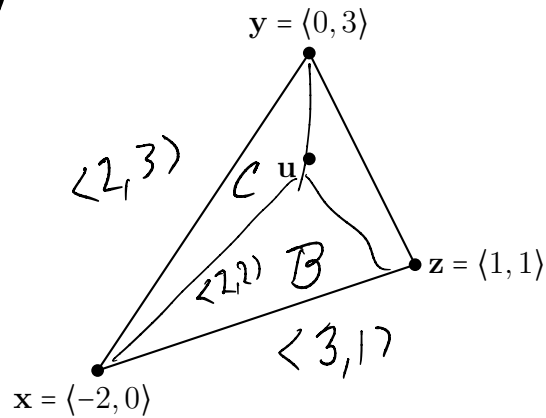


Name: Answer Key

PID:



For these questions, use the triangle to the right.

1. What are the barycentric coordinates of  $y$ ?  
And, what are the barycentric coordinates of  $\text{Lerp}(x, z, \frac{1}{2})$ ?

For  $y$ :  $\langle 0, 1, 0 \rangle$

For  $\text{Lerp}(\vec{x}, \vec{z}, \frac{1}{2})$ :  $\langle \frac{1}{2}, 0, \frac{1}{2} \rangle$

2. Give explicitly the point  $v$  with barycentric coordinates  $(\frac{1}{2}, \frac{1}{6}, \frac{2}{3})$ .

$$\vec{v} = \frac{1}{2}\vec{x} + \frac{1}{6}\vec{y} + \frac{2}{3}\vec{z} = \langle -\frac{1}{3}, \frac{7}{6} \rangle$$

3. Let  $u = \langle 0, 2 \rangle$ . What are the barycentric coordinates of  $u$ ?

Total area  $D = \frac{1}{2} \begin{vmatrix} 3 & 2 \\ 1 & 3 \end{vmatrix} = \frac{1}{2} (9 - 2) = \frac{7}{2}$

$B = \frac{1}{2} \begin{vmatrix} 3 & 2 \\ 1 & 2 \end{vmatrix} = \frac{1}{2} (6 - 2) = \frac{4}{2}$

$C = \frac{1}{2} \begin{vmatrix} 2 & 2 \\ 2 & 3 \end{vmatrix} = \frac{1}{2} (6 - 4) = \frac{2}{2}$

$\beta = B/D = \frac{4}{7}$

$\gamma = C/D = \frac{2}{7}$

$\alpha = 1 - \beta - \gamma = \frac{1}{7}$