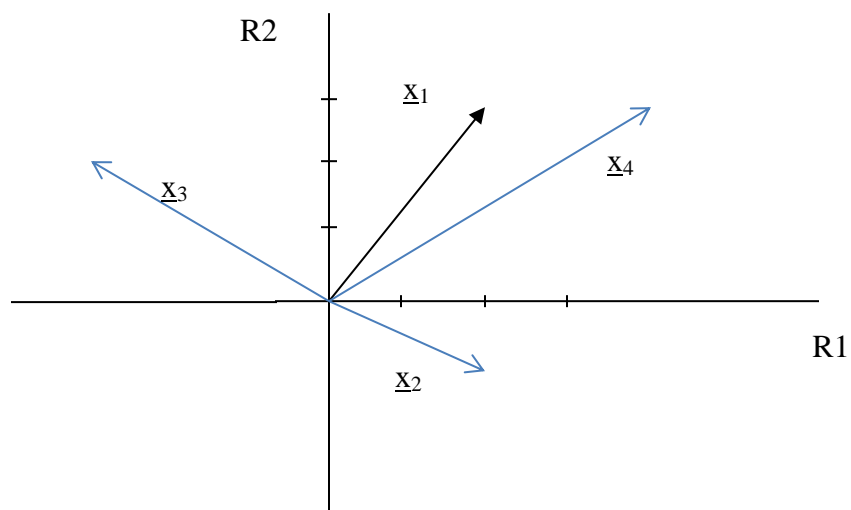# The Geometry of Vectors

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Consider three additional vectors

$$\underline{x}_2 = \begin{bmatrix} 2 \\ -1 \end{bmatrix}, \ \underline{x}_3 = \begin{bmatrix} -3 \\ 2 \end{bmatrix}, \ \underline{x}_4 = \begin{bmatrix} 4 \\ 3 \end{bmatrix}$$ Add these to the coordinate system.

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Compute the following:

$L(\underline{x}_2) = 2.24$

$L(\underline{x}_3) = 3.61$

$L(\underline{x}_4) = 5.00$

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L($\underline{p}_{42}$).
First solve for Cos $\theta_{42} = \dfrac{5.00}{(5.00)(2.24)} = 0.446$ $\qquad \theta_{42} = 64°$

L($\underline{p}_{42}$) = L($\underline{x}_4$) Cos θ_{42} = (5.00)(0.446) = 2.23

L($\underline{p}_{23}$).
First solve for Cos $\theta_{23} = \dfrac{-8.00}{(2.24)(3.61)} = -0.989$ $\qquad \theta_{23} = 172°$

L($\underline{p}_{23}$) = L($\underline{x}_2$) Cos θ_{23} = (2.24)(-0.989) = 2.215

Note that length is expressed in absolute value.