1. Find cosine of angle between two vectors

Calculate the norm of x and y

||x|| = √(-2)2 + 12 + 02 + 32 = √14

||y|| = √12 + 32 + √(-2)2 + 02 = √14

Utilize the dot product equation and reorganize to solve for cos of angle.

Cos  θ = xTy / ( ||x|| ||y|| ) = [ -2 1 0 3] • / (√14)2 = ((-2\*1) + (1\*3) + (0\*-2) + (3\*0)) / 14 = 1 / 14

1. Find magnitude of cross product of two vectors

||X x Y|| = ||X|| ||Y|| sin θ \* n

X x Y = = i + j + k