coffee.r

denis

2021-07-14

#!/usr/bin/r  
  
# 2.2.4 Orthogonalization Transformations  
# Given m nonnull, linearly independent vectors, x 1 , . . . , x m , it is easy   
# to form m orthonormal vectors, x̃ 1 , . . . , x̃ m , that span the same space  
# . A simple way to do this is sequentially. First normalize x 1 and call this   
# x̃ 1 . Next, project x 2 onto x̃ 1 and subtract this projection from x 2   
# . The result is orthogonal to x̃ 1 ; hence, normalize this and call it x̃ 2 .  
# These erst two steps, which are illustrated  
# in Figure 2.2, are  
m <- c(nonnull = 1, easy = c(1,1,1), orthonormal = c(1,2,3),   
 project = 1, subtract = 2, call = 2)  
  
# These are called Gram-Schmidt transformations.  
# The Gram-Schmidt transformations can be continued with all of the vectors in   
# the linearly independent set. There are two straightforward ways equations   
# (2.34) can be extended. One method generalizes the second equation in  
eq <- m  
summary(m, eq)

## Min. 1st Qu. Median Mean 3rd Qu. Max.   
## 1.0 1.0 1.0 1.5 2.0 3.0

xy.coords(m, eq)

## $x  
## [1] 1 1 1 1 1 2 3 1 2 2  
##   
## $y  
## [1] 1 1 1 1 1 2 3 1 2 2  
##   
## $xlab  
## NULL  
##   
## $ylab  
## NULL