1. How can you use the covariance matrix of a dataset to recreate the covariance structure in a dataset X of normal random variables?
    a. Compute ΣX
    b. Eigendecompose the covariance matrix into $\Sigma = U \Lambda U^{-1}$ compute UX
    c. Compute $U \Lambda X$
    d. Compute $U \Lambda^{(1/2)} X$
    e. None of the above
2. Which of the following are examples of positive semidefinite matrices?
    a. Distance matrices
    b. Affinity matrices
    c. Data matrices
    d. Rotation matrices
3. Positive semidefinite matrices have the following desirable properties?
    a. They have all positive eigenvalues
    b. They have real eigenvalues
    c. They are invertible
    d. They are symmetric
4. Which of the following properties do inner products satisfy?
    a. They are symmetric
    b. They are non-negative
    c. They follow the triangle inequality
    d. They are linear in the first term
5. PCA components (data coordinates) can be found by:
    a. Eigendecompose the covariance matrix $\Sigma = U \Lambda U^{-1}$, use U
    b. Use $U \Lambda$
    c. Compute $X = USV^T$ and use US
    d. None of the above
6. Which of the following are distances between x=(x1,x2) and y=(y1,y2)?
    a. <x,y>
    b. <x-y,x-y>
    c. <x+y,x+y>
    d. |x1-y1|+|x2-y2|
    e. None of the above
7. The norm of a vector x in an inner product space <,> H is defined as
    a. <x,x>
    b. <x-y, x-y>
    c. $x^T y$
    d. $(\langle x,x \rangle)^{1/2}$
8. T/F any positive semidefinite matrix is a kernel matrix
9. T/F There are fewer PCA dimensions than data dimensions
10. T/F The axes in metric MDS can be interpreted easily