QUIZ 4

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1 PROBLEM 1

1. If **a** *and* **b** are two collinear vectors, then which of the following are incorrect:

1) **b** = λ**a** for some scalar λ
2) **a** = ±**b**
3) the respective components of **a** *and* **b** are not proportional
4) both the vectors **a** *and* **b** have same direction, but different magnitudes.

SOLUTION: Considering each option:

1) **b** = λ**a** for some scalar λ is correct, it is the condition for collinearity of two vectors.
2) **a** = ±**b** is also correct, it shows that unit vectors in the direction of given vectors are either in the same direction or in opposite direction i.e., they are collinear.
3) the respective components of **a** *and* **b** are not proportional. This is also correct, if for two vectors the respective components are proportional, then their magnitude will be different but they will be collinear.
4) both the vectors **a** *and* **b** have same direction, but different magnitudes.This is incorrect, because if the two vectors are collinear then they may have same directions or opposite directions, in both the areas they will be collinear.