Magnitudes of Scalar Multiples - Step-by-Step Lesson
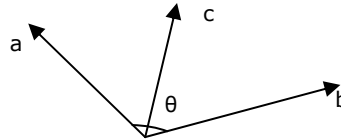
Lesson 1 Scalar Multiples Problem:

If $a = 6i+3j$, $b = 8j$ and $c = i+j$, the angle between a and b is 120° and it is given that c bisects a and b then find the following to two decimal places:

(a) a.b

(b) a.c

(c) b.c

Explanation:

To solve:

(a) a.b= | a | | b | cos 120°

$\quad\quad$ = 6.71 x 8 x -0.5 = -26.84

(b) a.c= | a | | c | cos 60°

$\quad\quad$ = 6.71 x √2 x .5 = 4.74

(c) b.c= | b | | c | cos 60°

$\quad\quad$ = 8 x √2 x .5 = 5.66

The answers are a.b = -26.84, a.c = 4.74, b.c = 5.66.