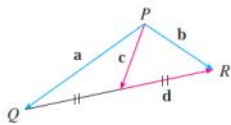
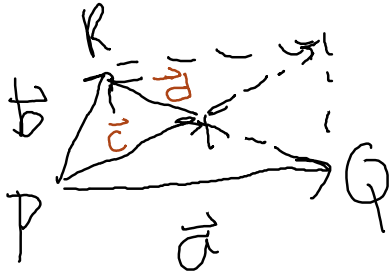


Geometric Vectors (Solution)

7. In the figure, the tip of c and the tail of d are both the midpoint of QR . Express c and d in terms of a and b .



(1) Redraw and finish the parallelgram:



Q12.2-7 from Calculus: Early Transcendentals 7e by Stewart

Why: Want to express c and d in terms of a and b .

Steps:

1. Complete the parallelogram to find $a+b$ and $a-b$, $b-a$
2. Express c and d in terms of a and b

(2)

$$2\vec{c} = \vec{a} + \vec{b}$$

$$\vec{c} = \frac{1}{2}\vec{a} + \frac{1}{2}\vec{b}$$

$$2\vec{d} = \vec{b} - \vec{a}$$

$$\vec{d} = \frac{1}{2}\vec{b} - \frac{1}{2}\vec{a}$$

You can also use

$$\vec{d} = -\vec{c} + \vec{b}$$

$$\vec{d} = -\frac{1}{2}\vec{a} - \frac{1}{2}\vec{b} + \vec{b}$$

$$\vec{d} = \frac{1}{2}\vec{b} - \frac{1}{2}\vec{a}$$

