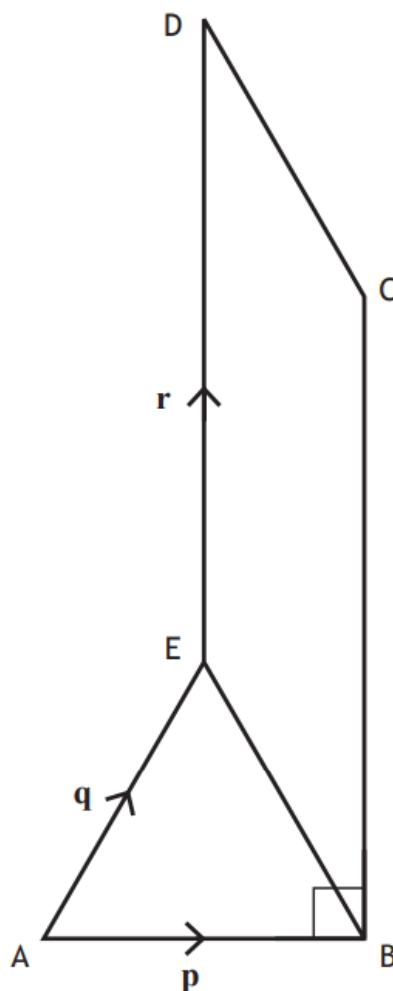


Higher Maths
SQA 2015 Paper 2
Question 6



Vectors \mathbf{p} , \mathbf{q} and \mathbf{r} are represented on the diagram as shown.

- BCDE is a parallelogram
- ABE is an equilateral triangle
- $|\mathbf{p}| = 3$
- Angle $ABC = 90^\circ$



- (a) Evaluate $\mathbf{p} \cdot (\mathbf{q} + \mathbf{r})$. 3
- (b) Express \vec{EC} in terms of \mathbf{p} , \mathbf{q} and \mathbf{r} . 1
- (c) Given that $\vec{AE} \cdot \vec{EC} = 9\sqrt{3} - \frac{9}{2}$, find $|\mathbf{r}|$. 3

Answers:

- (a) $4\frac{1}{2}$ (b) $-\mathbf{q} + \mathbf{p} + \mathbf{r}$ or equivalent (c) 6