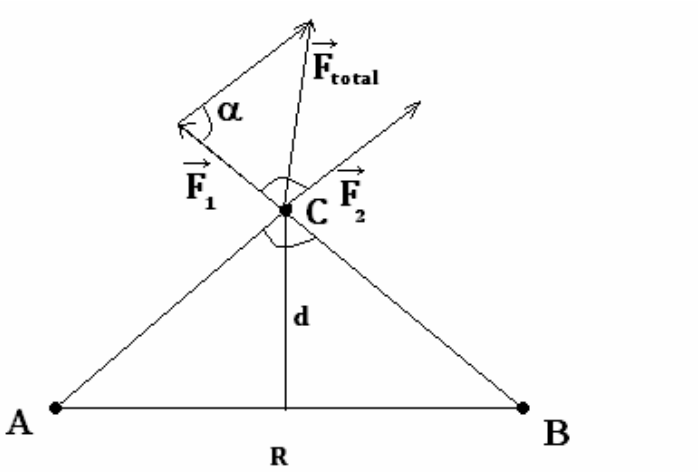
QUESTION:

Two point charges A and B are R distance apart. a third point charge placed on the perpendicular bisector at a distance d from the centre will experience maximum electrostatic force when...

SOLUTION:



Let's assume that all charges are similar. Hence, total force, acting on the third charge, according to the law of cosines is

$$F_{total} = \sqrt{F_1^2 + F_2^2 - 2F_1F_2\cos\alpha}$$

So, maximum total force is reached when

$$\cos\alpha = 0$$

$$or$$

$$\alpha = 90^o$$

Or when triangle ABC is a right triangle, and angle ACB=90^o

ANSWER

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