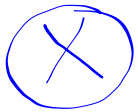
A point in space has a voltage of 4.5 V. Will a charged particle accelerate at that location? Explain how you know – or if you don't know, explain what additional information would help you determine the answer.

We don't know! Unless we know if there are higher/lower EQPE around this point, we can't predict.



$V_{x\infty} = 4.5V$

It would take 4.5 to move a +1 C charge from ∞ to X

IT'S THE DIFFERENCE BETWEEN TWO POINTS THAT MATTERS!

$V_{ba} = \oplus$

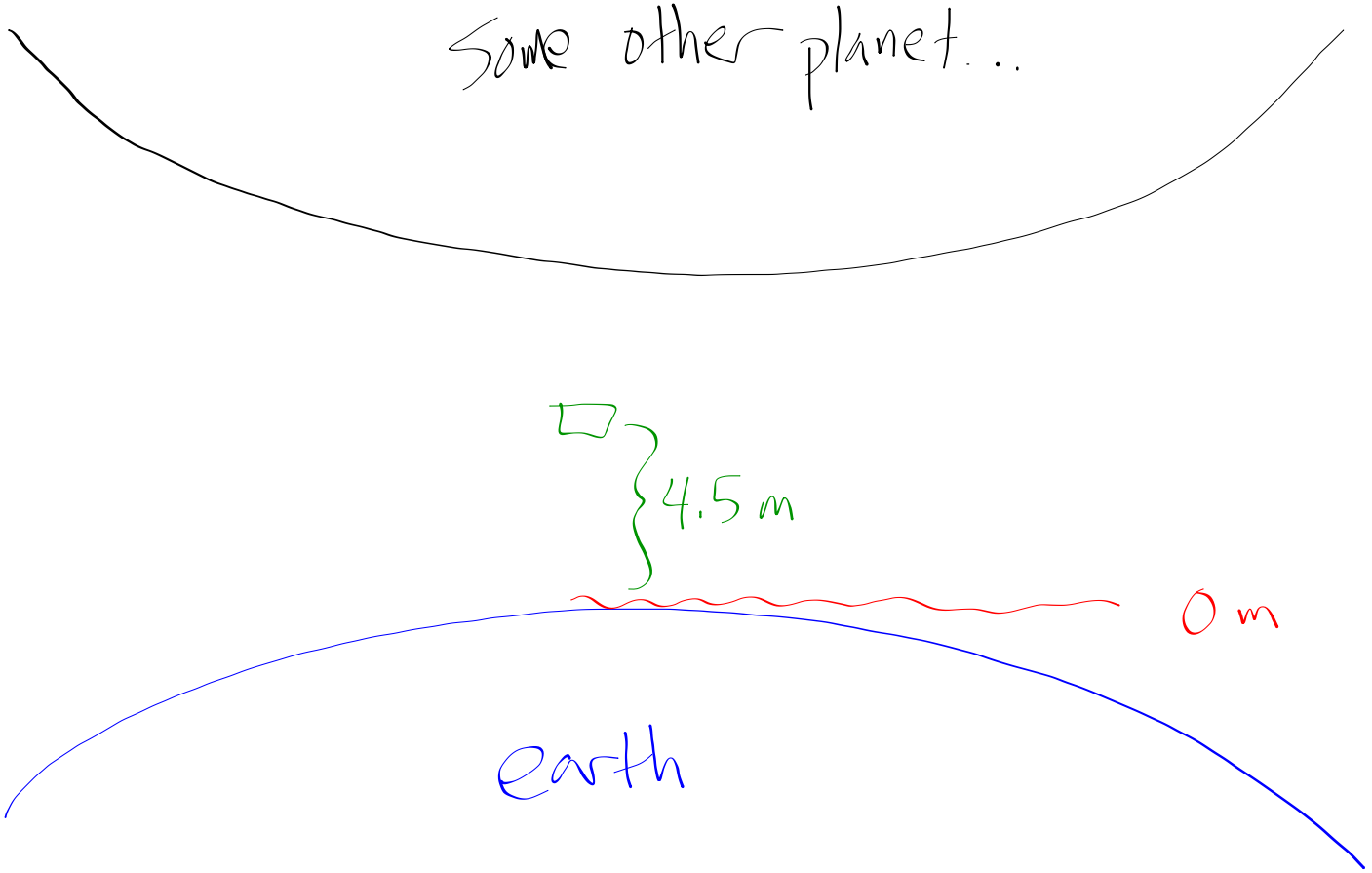
A ⊕ charge will not accelerate in that direction due to the e-field

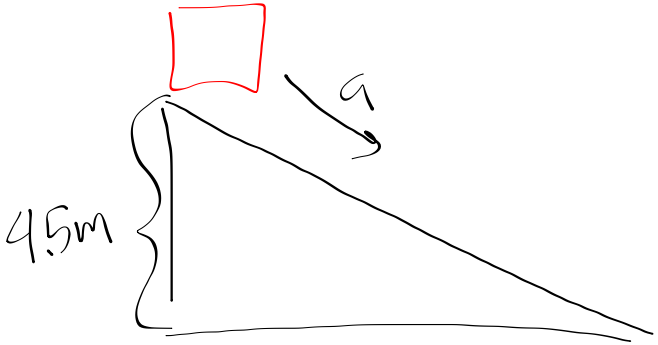
A ⊖ charge will

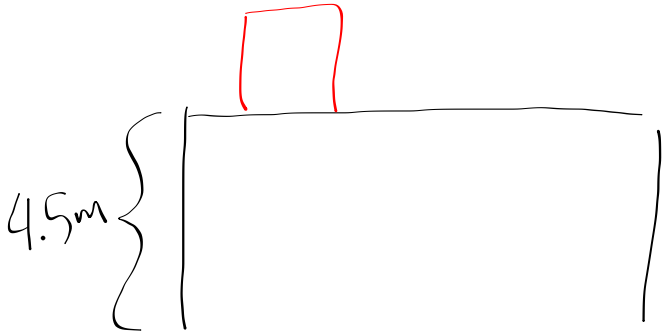
$V_{ba} = \ominus$

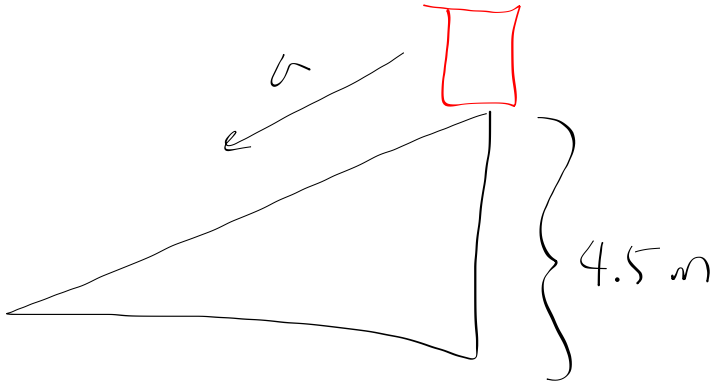
A ⊕ charge will accelerate in that direction due to the e-field

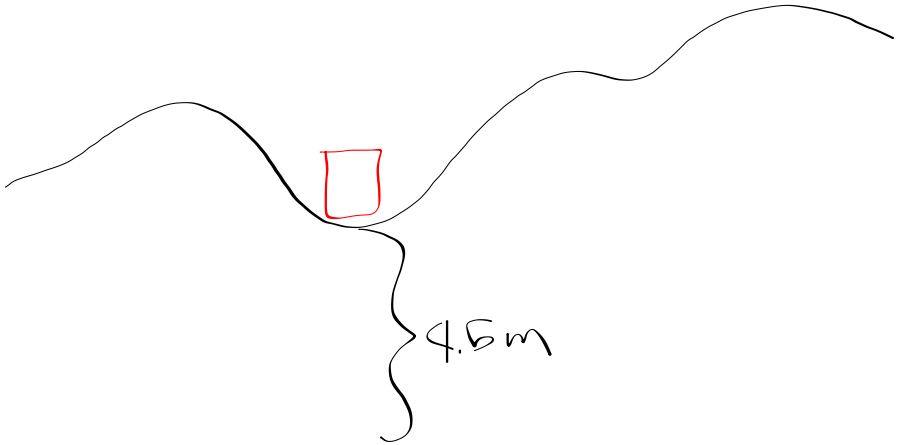
A ⊖ charge will not

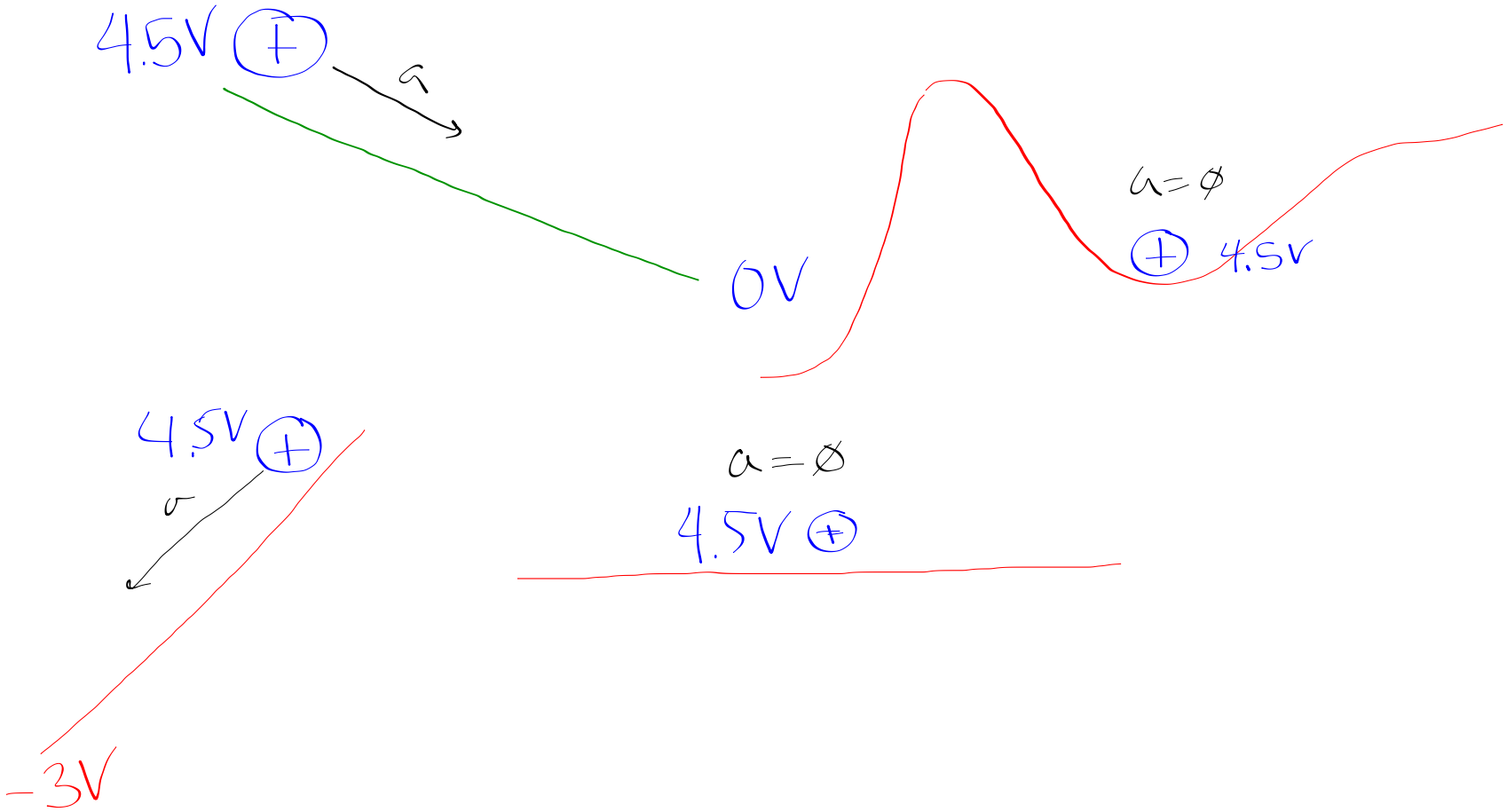

Some other planet...
4.5 m
0 m
earth

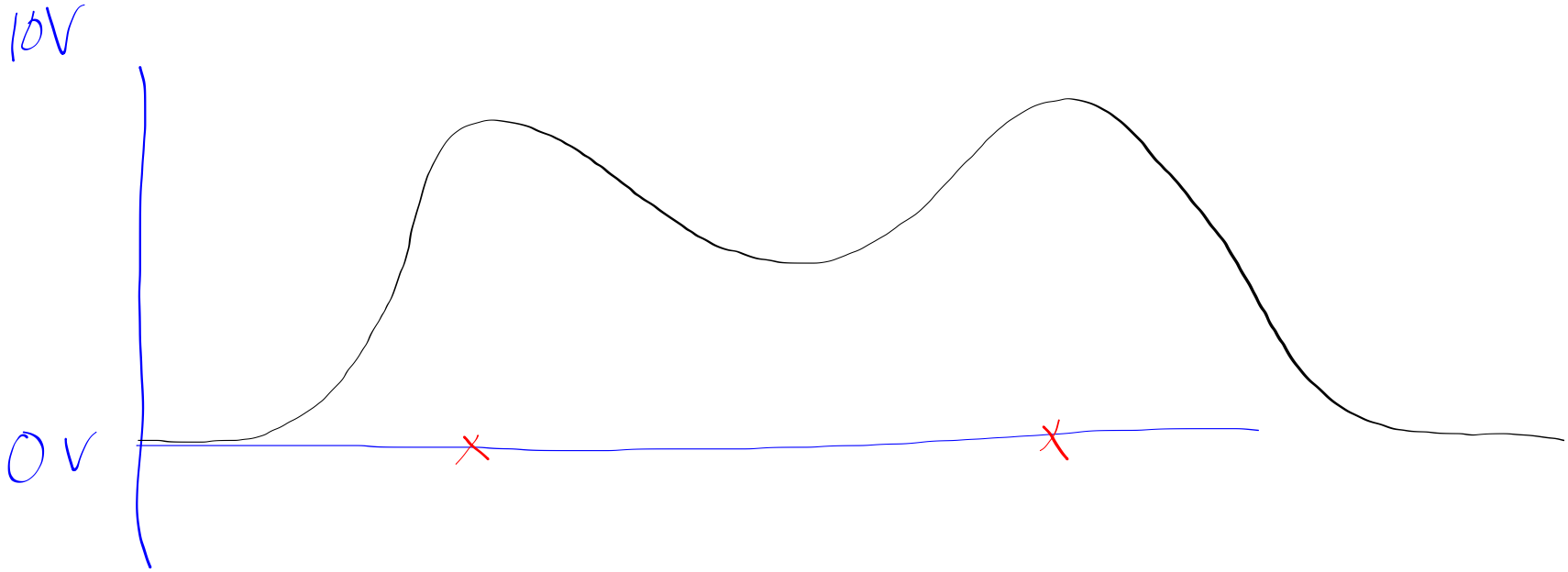

4.5m

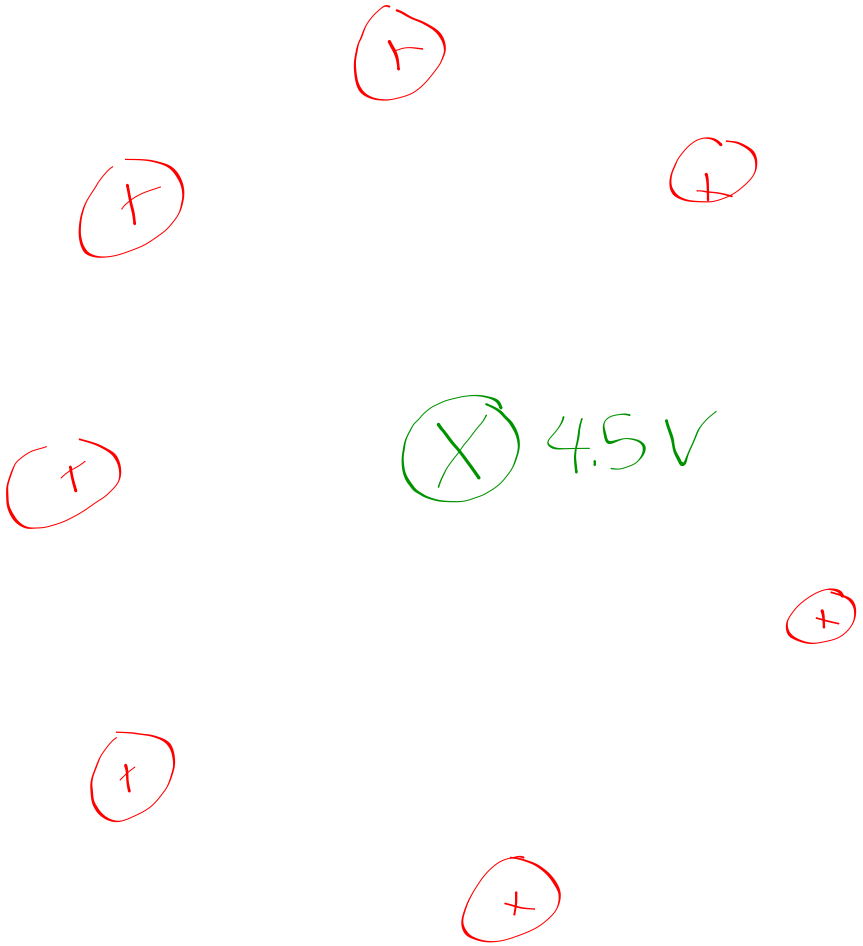

4.5m

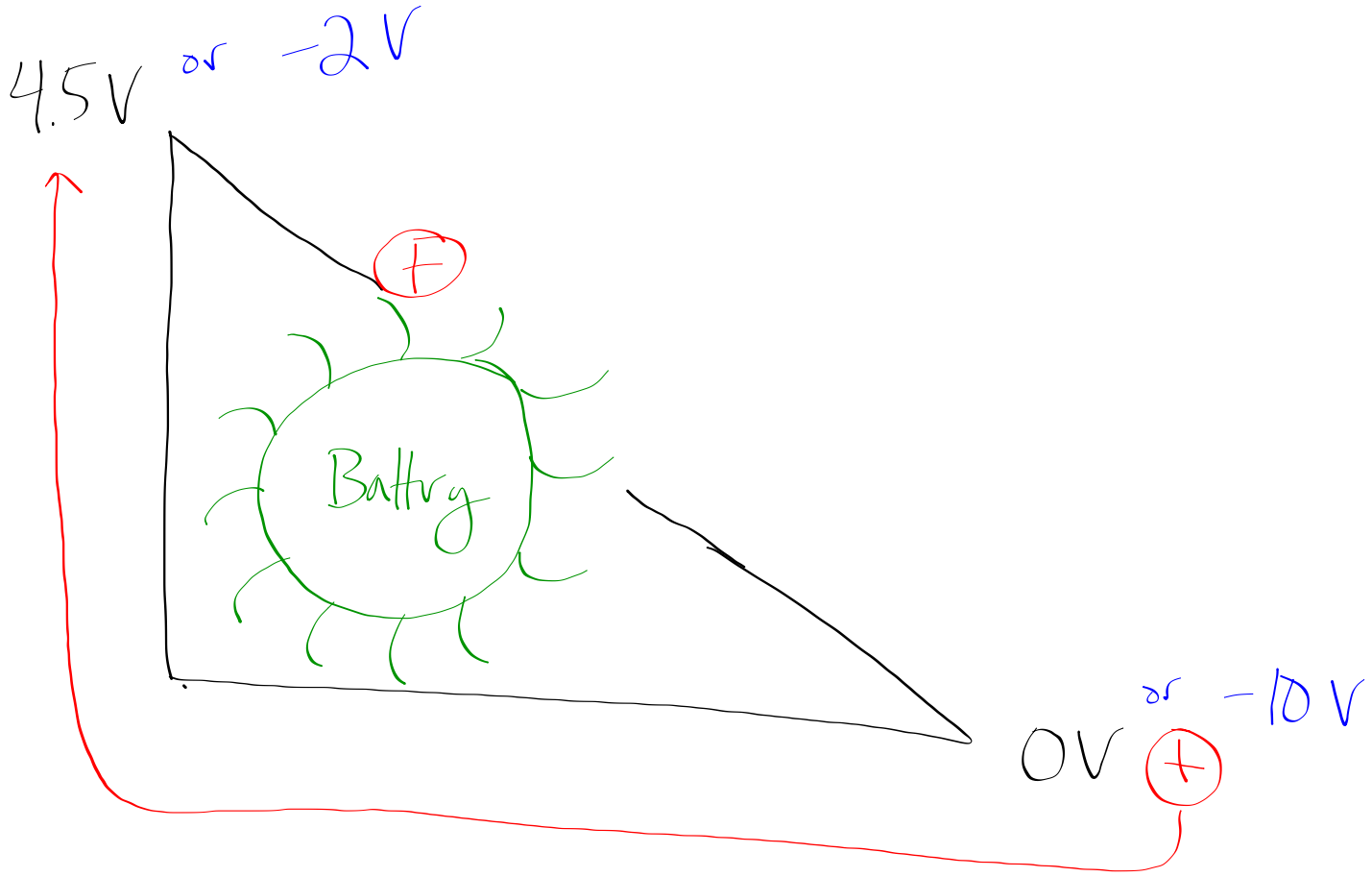

4.5 m

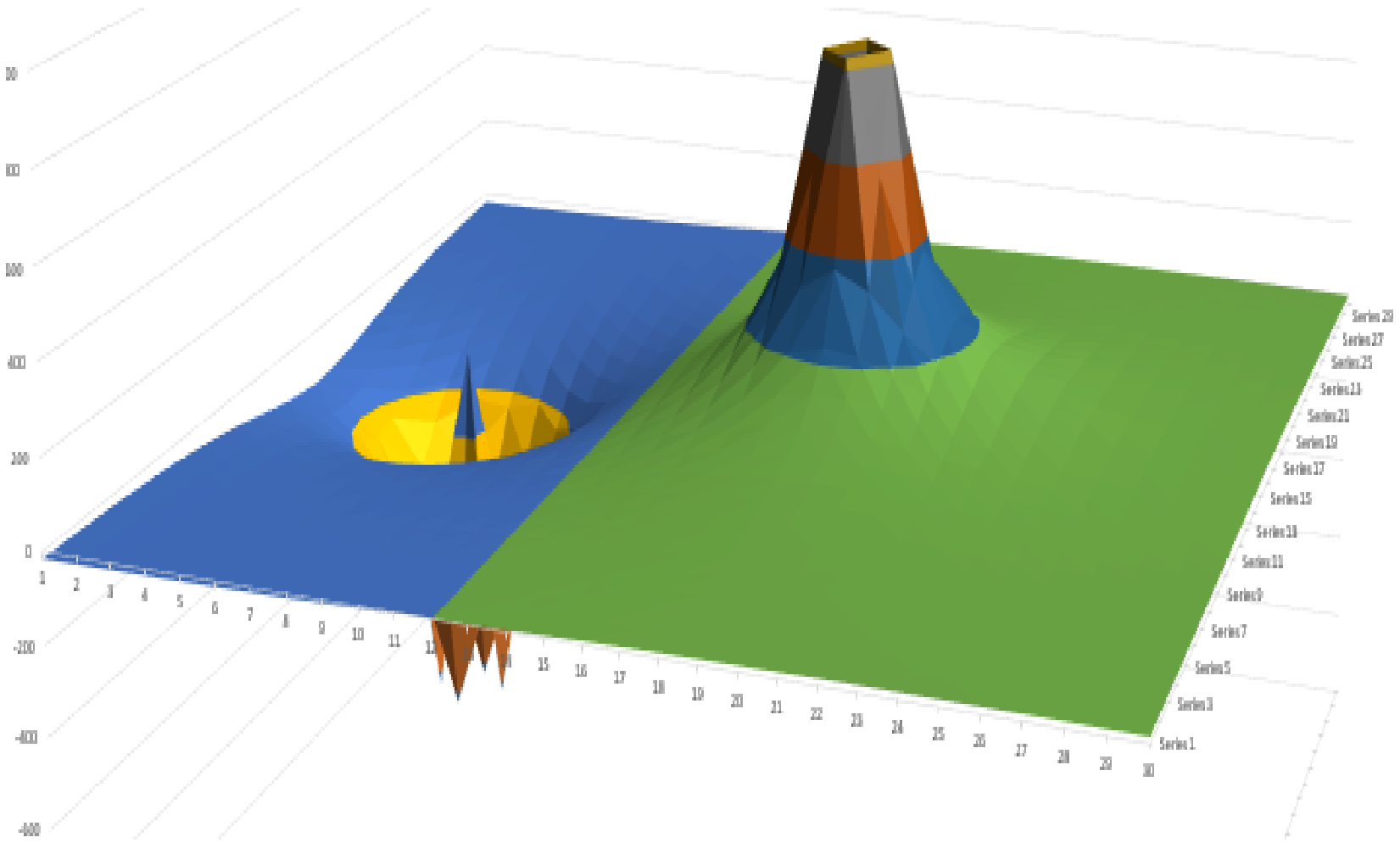

4.5m


4.5V
+
a
0V
a = ∅
+ 4.5V
4.5V
+
v
-3V
a = ∅
4.5V
+


10V
0 V


4.5 V


4.5V
or
−2V
F
Battry
0V
or
−10V
+


800
600
400
200
0
-200
-400
-600
1
2
3
4
5
6
7
8
9
10
11
15
16
17
18
19
20
21
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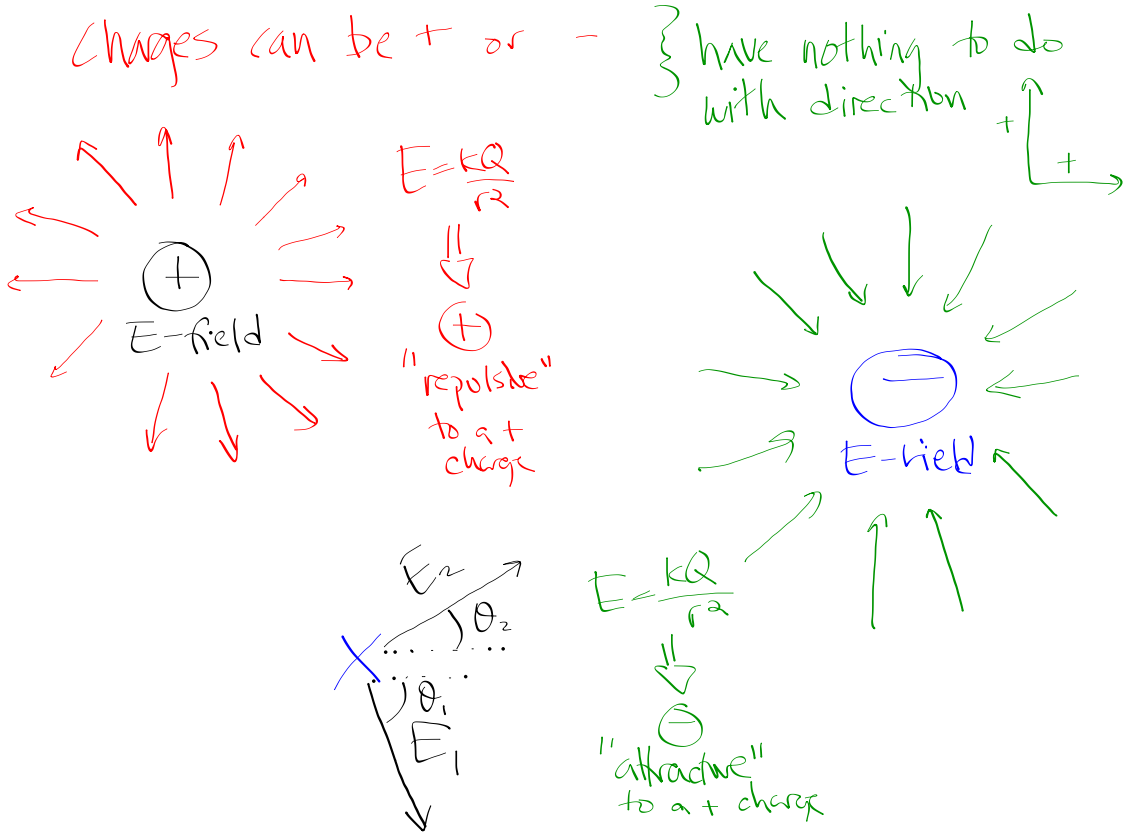
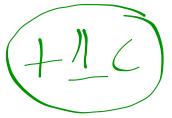
24
25
26
27
28
29
30
Series 29
Series 27
Series 25
Series 23
Series 21
Series 19
Series 17
Series 15
Series 13
Series 11
Series 9
Series 7
Series 5
Series 3
Series 1

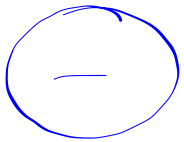
When you calculate the net electric field in a location due to the presence of more than one large charge (Q), it is generally not helpful to include the sign of the charges in the equation for electric field. Why not? Specifically, what does the sign of a charge tell you about the direction of the electric field, and what does the sign of a charge NOT tell you about the direction of the electric field?

In contrast to net electric field, when you calculate the voltage (electrical potential) at a point in space – whether it's due to the presence of one or more large charges – it is critical for you to include the sign of the Q's that are creating the electric field. Why?




+


+11C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