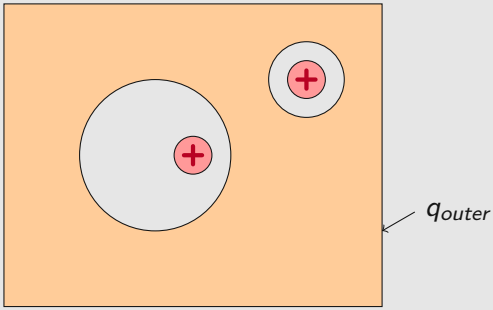
# Announcements

- Homework 4 due tonight!
- I'll try to have HW 5 out by tonight, tomorrow at latest
- For Wednesday read Ch 3.2, the Method of Images
- On Friday I'm aiming for a computer tutorial on the Method of Relaxation

# Q1

A neutral copper slab has several hollow patches in which live several charges, each with charge $+q$. What is the total charge on the outside surface of the copper slab?




A. $q_{outer} = 0$
B. $q_{outer} = 2q$
C. $q_{outer} = -2q$
D. $0 < q_{outer} < 2q$

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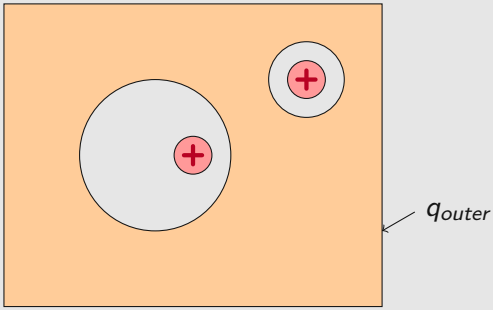


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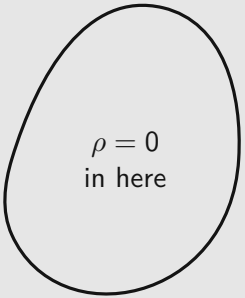
# Q2

A region of space contains no charges. What can you say about $V$ in the interior?

A. $V(r) = 0$ everywhere in the interior
B. $V(r) =$ constant everywhere in the interior
C. Not much can be said. $V(r)$ has many possibilities in there



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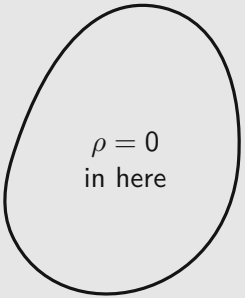

# Q3

What is the solution to Laplace's Equation in 1D if the boundaries are given by $V(x = 0\,\text{m}) = 10\,\text{V}$ and $V(x = 10\,\text{m}) = 5\,\text{V}$.

A. $V(x) = 2x$

B. $V(x) = 2x + 10$

C. $V(x) = -\frac{x}{2} + 10$

D. $V(x) = x^2 - \frac{21}{2}x + 10$

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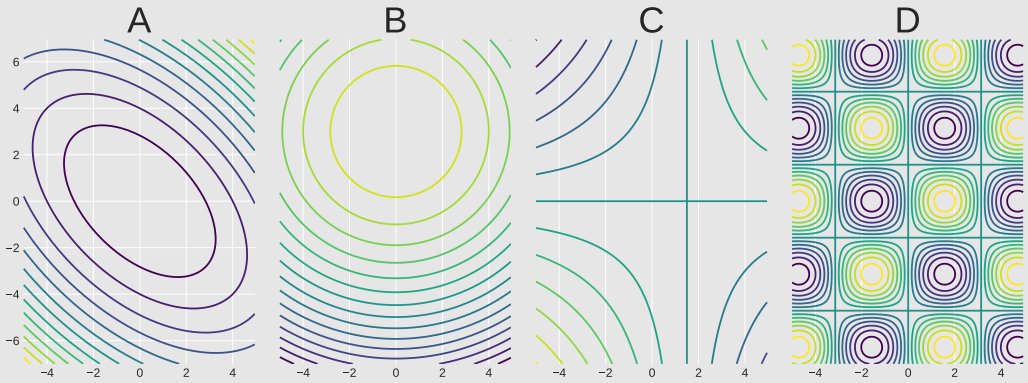
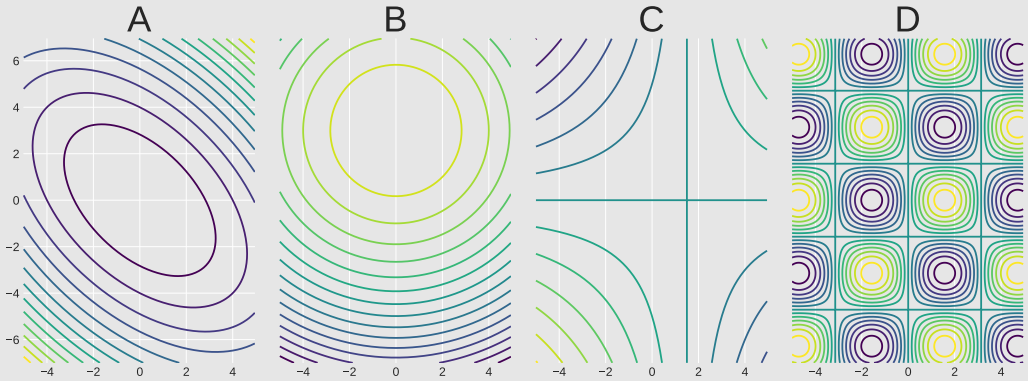
# Q4

Which on the following height maps is a legitimate solution to the Laplace Equation?



# Q4

Which on the following height maps is a legitimate solution to the Laplace Equation?
C is best!



# Q5

To solve the 1D Laplace Equation requires we submit 2 boundary conditions to solve for the two arbitrary constants. How many boundary conditions must we require for solving the 2D Laplace Equation?

A. Still 2. The Laplace equation always requires 2 boundary conditions.
B. 4 different points on the boundary will suffice
C. 2 points on the boundary and 2 derivatives at the boundary will suffice
D. None of the above will suffice

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# Q6

A region of space contains no charges. The boundary also has $V = 0$ everywhere along it. What can you say about $V$ in the interior?

A. $V(r) = 0$ everywhere in the interior
B. $V(r) =$ constant $> 0$ everywhere in the interior
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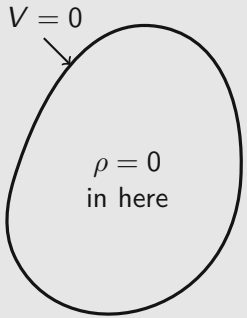

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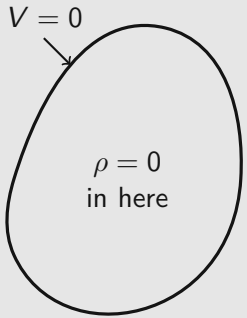
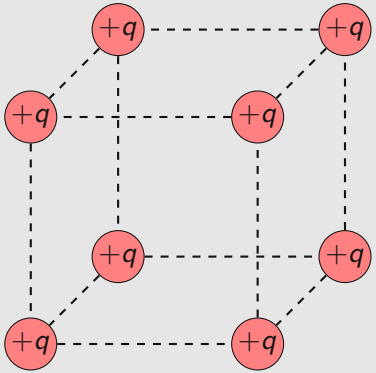


# Q7

If you put a positive test charge in the exact center of the cube of charges to the right, would it be in stable equilibrium?

A. Yes
B. No
C. I don't remember what stable equilibrium means...






Meeting at Laplace

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