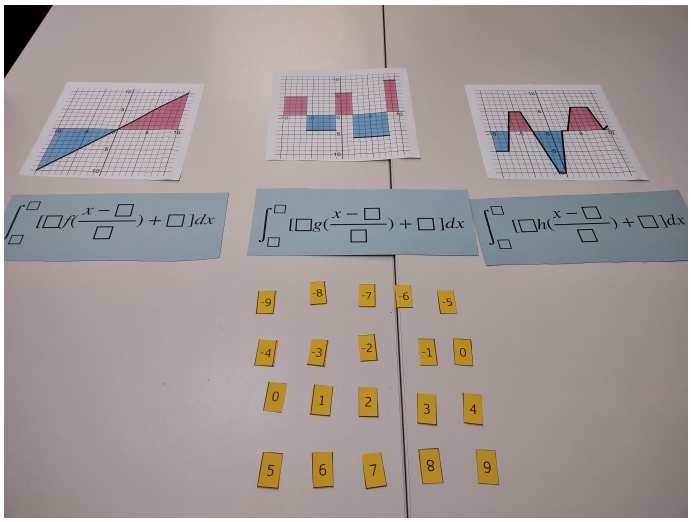
THE INTEGRAL STRUGGLE

Rules

In The Integral Struggle, two teams vie for control of three different areas (as calculated by integrals). The two teams have the power to transform and limit each area to make the signs read in their favor.

Set-up



Split into two teams: the *positive* team and the *negative* team. Place the three graphs and their corresponding integral board in a line. (For the purposes of the Desmos Player Aid, the linear graph is f(x), the piecewise constant graph is g(x), and the piecewise linear graph is h(x).) Then lay out the number cards below or to the side, so they are accessible to everyone.

Determine which team goes first randomly.

Goal

Each graph, at the start, has a total signed area of 0 on the interval [-10,10]. Your team's goal is to make the area for 2 out of the 3 functions the same sign as your team name. (So the positive team wants positive areas, and the negative team wants negative areas.)

Gameplay

On your team's turn, take one of the number cards and place it in an empty spot on one of the three function boards. You can place on any of the three boards - and you can change which board you play on every turn.

Once all 18 slots of filled, evaluate each integral. (Use the Desmos Aid graph to apply your transformations to make it easier.) If the result is positive, the positive team gets a point. If the result is negative, the negative team gets a point. If the result is undefined (which could happen if the function was transformed outside of the limits of integration).

In the event of a tie, replay the integral that is undefined or 0 until a victor is determined.

Tips

Think about when or where to use a 0 - they can have a big effect.

A well-placed negative can turn a whole situation around.

Even if most of the graph is in your opponent's areas, maybe changing the limits of integration to a different section can help.