Chili Pepper Function Challenge

Points A and B are shown below on the coordinate plane. The challenges below should be solved **without a calculator.** Choose which challenges you want to complete so that you earn a total of 15 chili peppers. Use Desmos to verify your equation satisfies the challenge.

A graph of a function on a grid

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A red hot chili pepper

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Write an equation for a linear function that passes through A and B.

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Challenge 2:

Write an equation for your function from Challenge 1 in an alternate, but equivalent, form.

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Challenge 3:

Write an equation for an exponential function that passes through A and B.

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Write at least three equivalent forms for your function from Challenge 3.

A graph of a function on a grid

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Write an equation for a quadratic function that passes through A and B where . How many such functions are possible?

Challenge 6:



Write an equation for a quadratic function that has a maximum at point A and passes through point B.

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Challenge 7:

Write an equation for your function 𝑘 from Challenge 6 in an alternate, but equivalent, form.

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Challenge 7:

Write an equation for a piecewise function where one sub-function passes through A and the other sub-function passes through B. Be sure to give the domain restriction of each sub-function.



Challenge 8:

Write an equation for a sinusoidal function that has a maximum at point A and a minimum at point B.



Challenge 9:

Write an equation for a sinusoidal function that has a midline passing through A and a minimum at point B.

A graph of a function on a grid

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Rewrite your equation for function in Challenge 8 using a different trig function.



Challenge 11:

Write an equation for an even function that passes through A and B.



Challenge 13:

Write an equation for a rational function that passes through A and B.



Challenge 14:

Write an equation for a cubic function that has a relative maximum at point A and a relative minimum at point B. (You can investigate with Desmos for this one!)

A red hot chili pepper

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