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How technology can change the way your students think about functions

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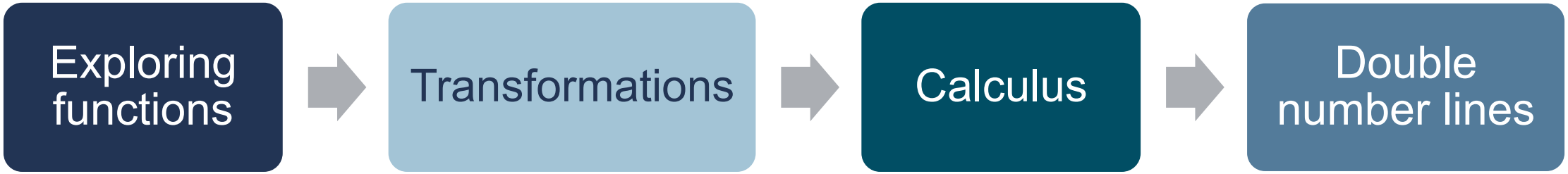
How technology can change the way your students think about functions



tinyurl.com/2026-mei-desmos-b

Exploring functions

What is a function?

What is the difference between

$$y = x^2$$

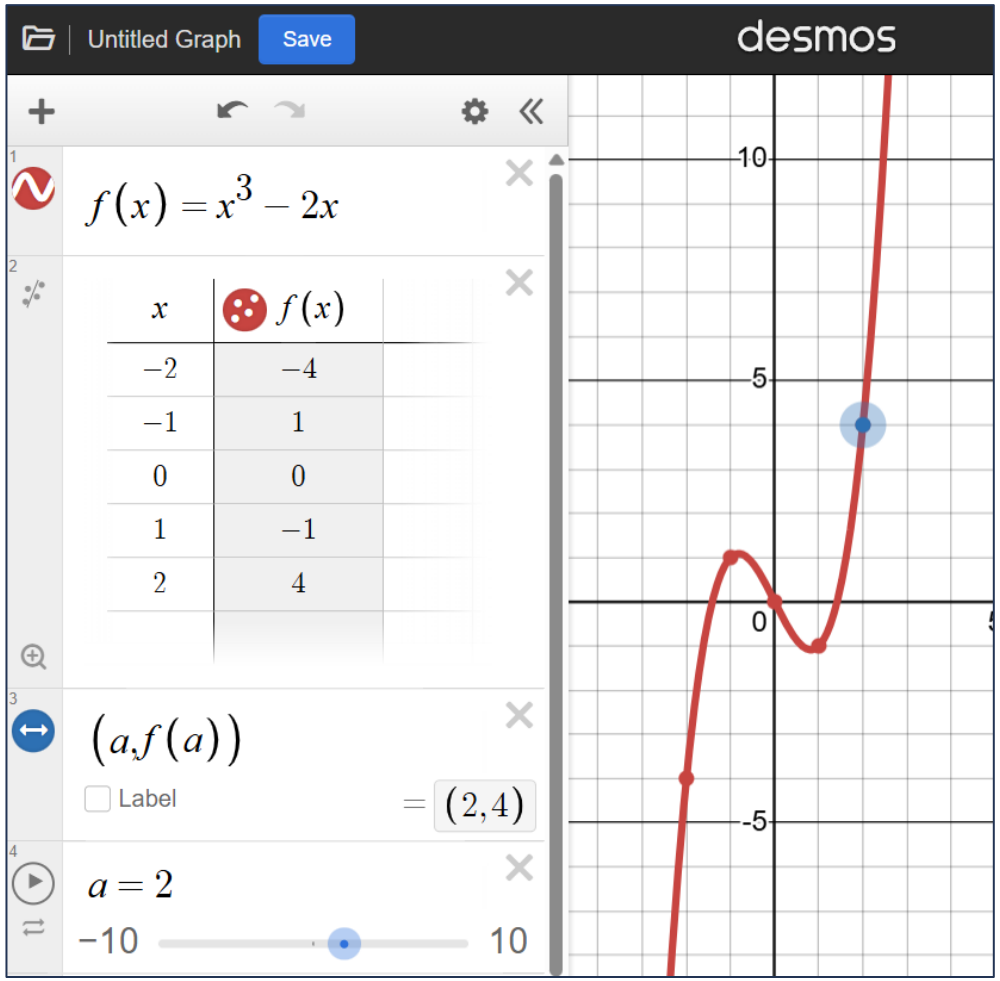
and

$$\mathrm{f}(x) = x^2$$

Representing functions on Desmos

Functions can be represented on Desmos as:

- Graphs
- Algebra
- Tables
- Points



Task 1

Find some examples of functions for which either:

$$f(-x) = f(x) \qquad \text{or} \qquad f(-x) = -f(x)$$

Describe the behaviour of these functions in terms of their:

- Graphs
- Algebra
- Tables
- Points

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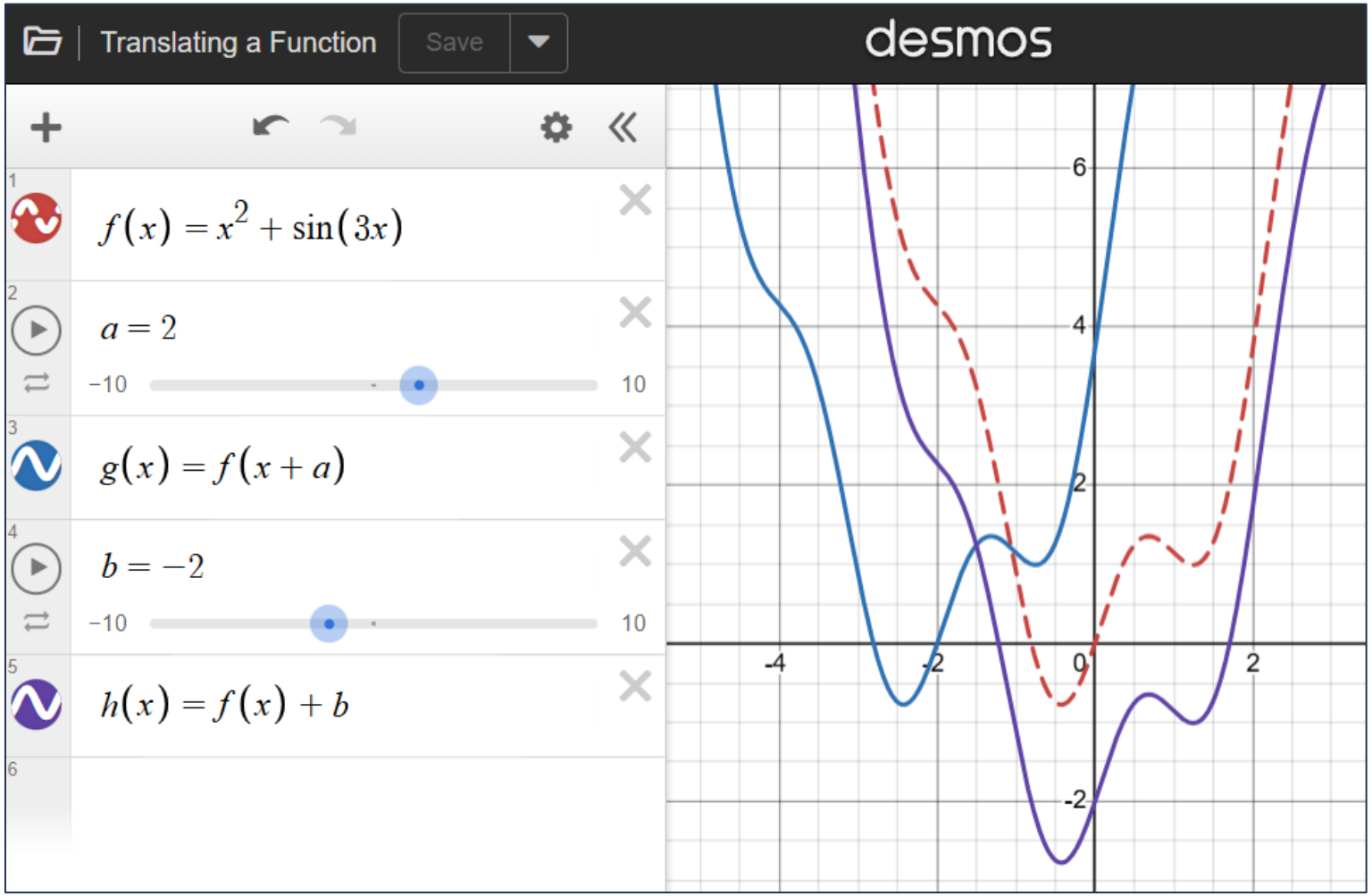
Transformation of functions

Translating functions



Calculus

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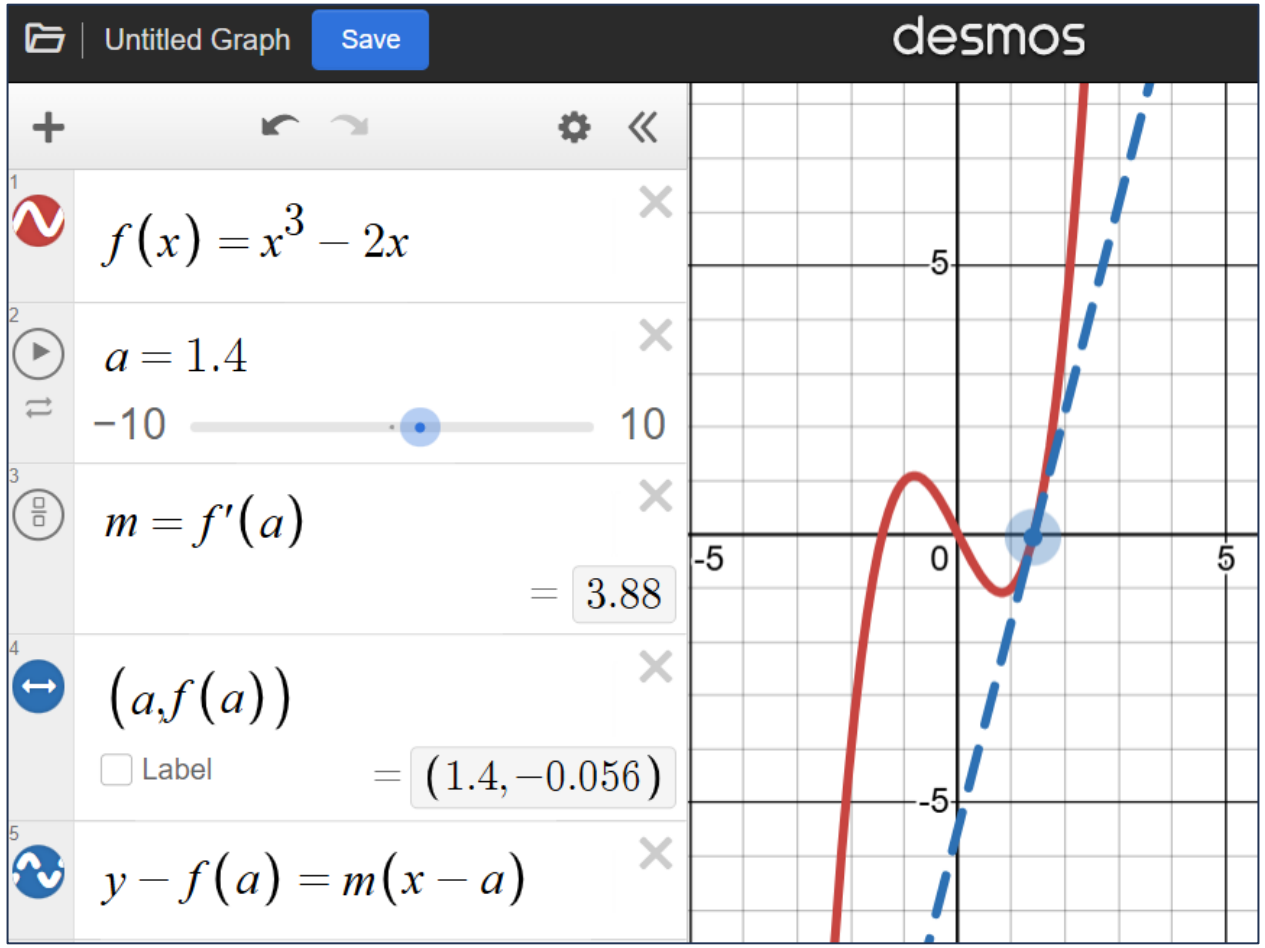
Derivatives and tangents



Task 2

- Explore some of the files in the gallery for:
  - Domain restrictions and ‘slow plot’
  - Piecewise functions
  - Plotting integrals
  - Unit circles and trig functions
- How would you use these in your teaching?

How would you use dynamic forms of

$$y = \mathrm{f}(x + a)$$

and

$$y = \mathrm{f}(x) + b$$

to explain the translation of functions?

The tangent to the curve with equation $y = x^3$ is drawn at the point $x = a$. Where does this tangent cross the curve?

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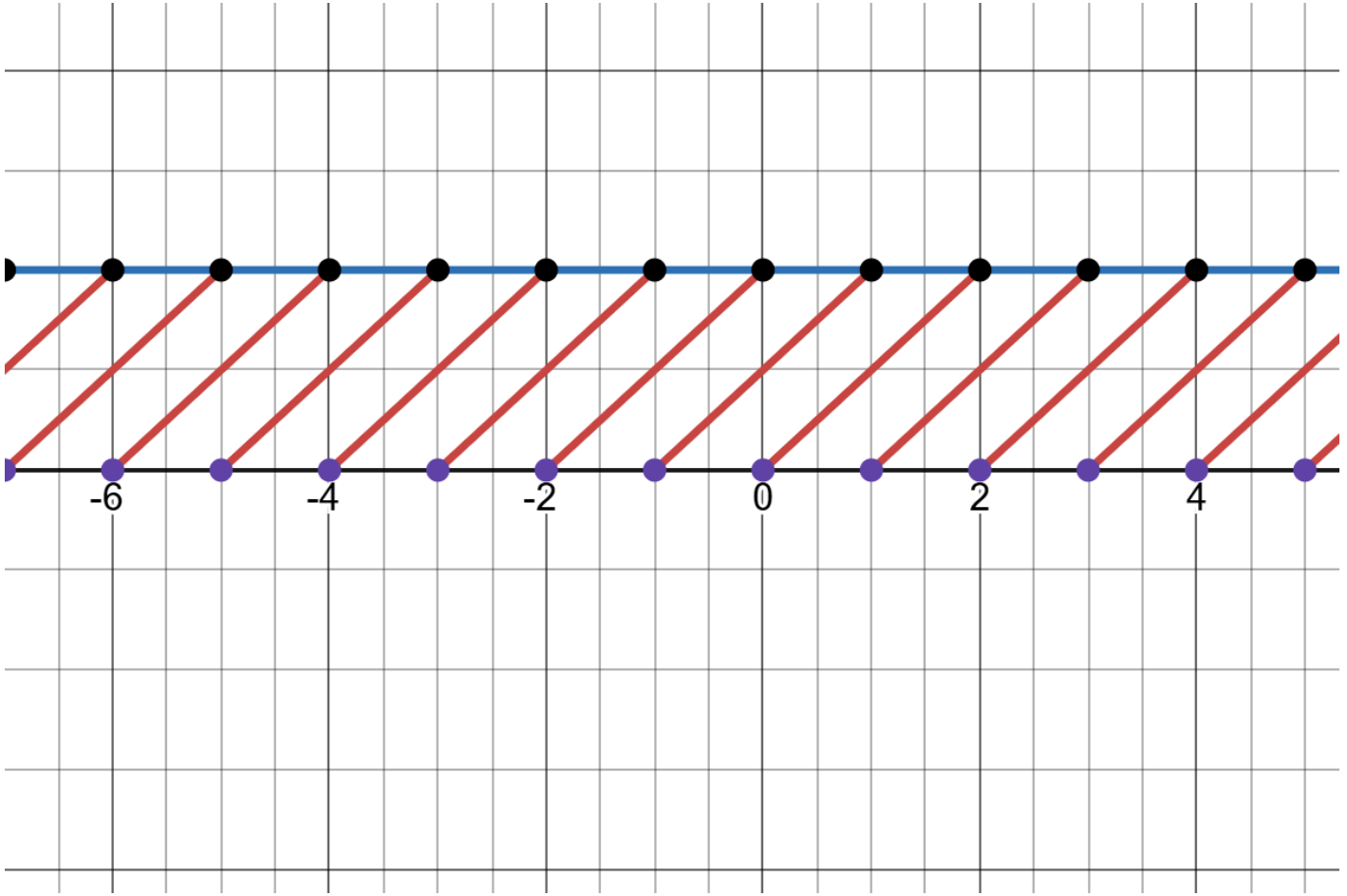
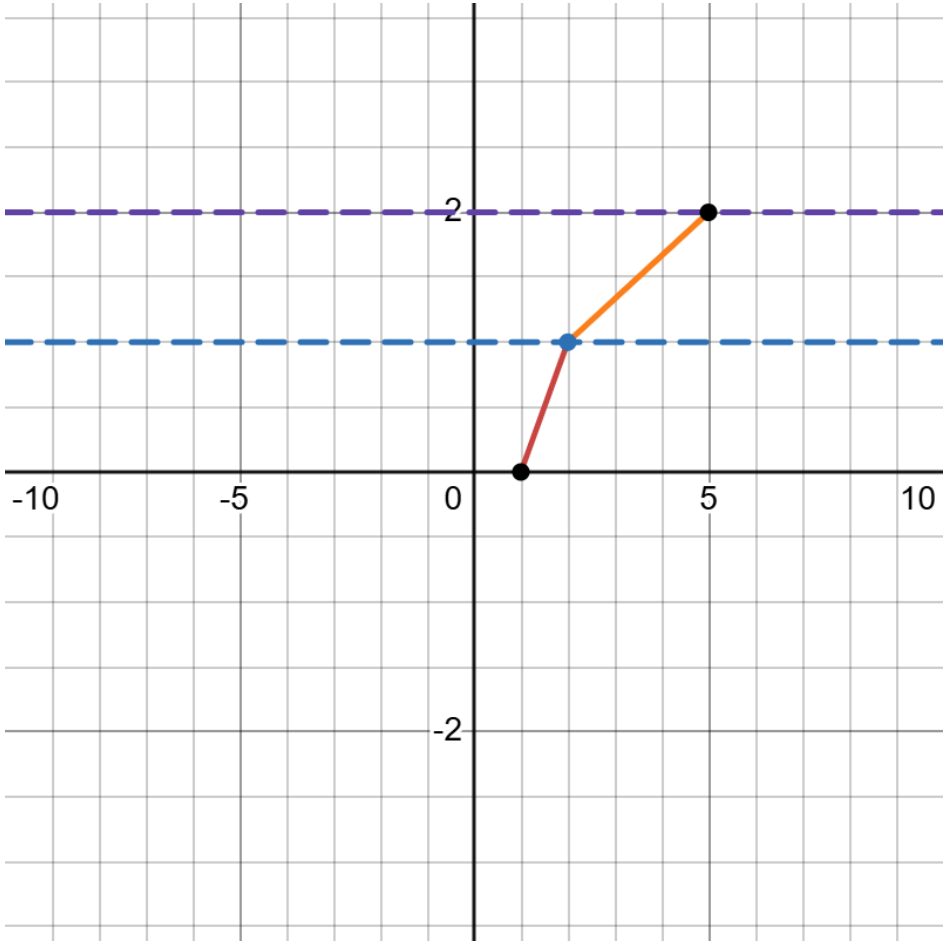
Representing functions using number lines

Using number lines

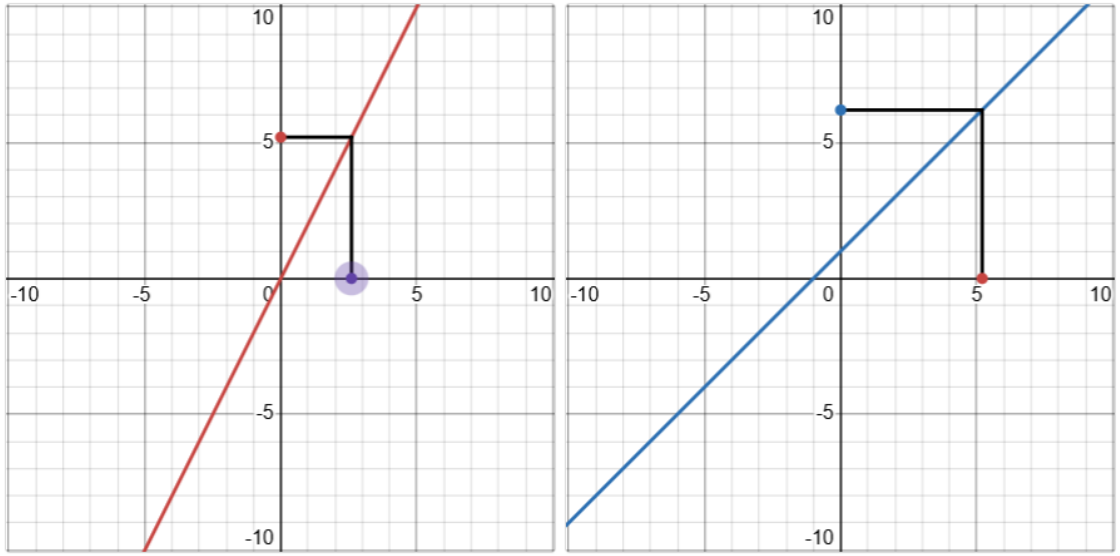


Two visualisations of composite functions



$f(x) = x + 1$

$g(x) = 2x$



$f\big(g\big(\boxed{2.6}\big)\big) = \boxed{6.2}$

Task 3

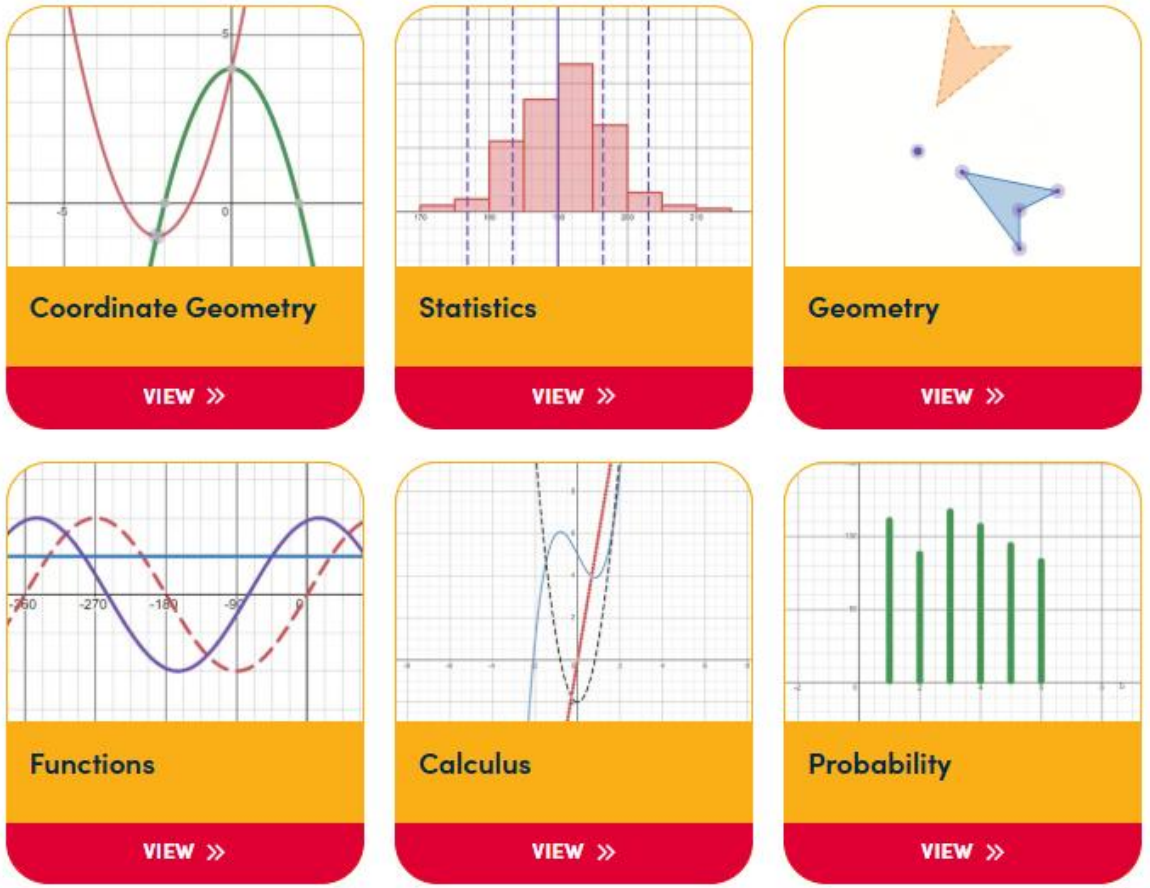
- Find two quadratic functions $\mathrm{f}(x)$, $\mathrm{g}(x)$ so the equation $\mathrm{f}\big(\mathrm{g}(x)\big) = 0$ has the four roots $x = 1, 2, 3, 4$

- Explore using the two different representations of composite functions to solve the problem

Reflections

How can technology change the way your students think about functions?

Further support



amsp.org.uk/teachers/teaching-with-desmos-webinars/