



Innovators in
Mathematics
Education



TEXAS
INSTRUMENTS

MEI Conference 2013

My Top 20 pictures for teaching Core Maths

Bernard Murphy

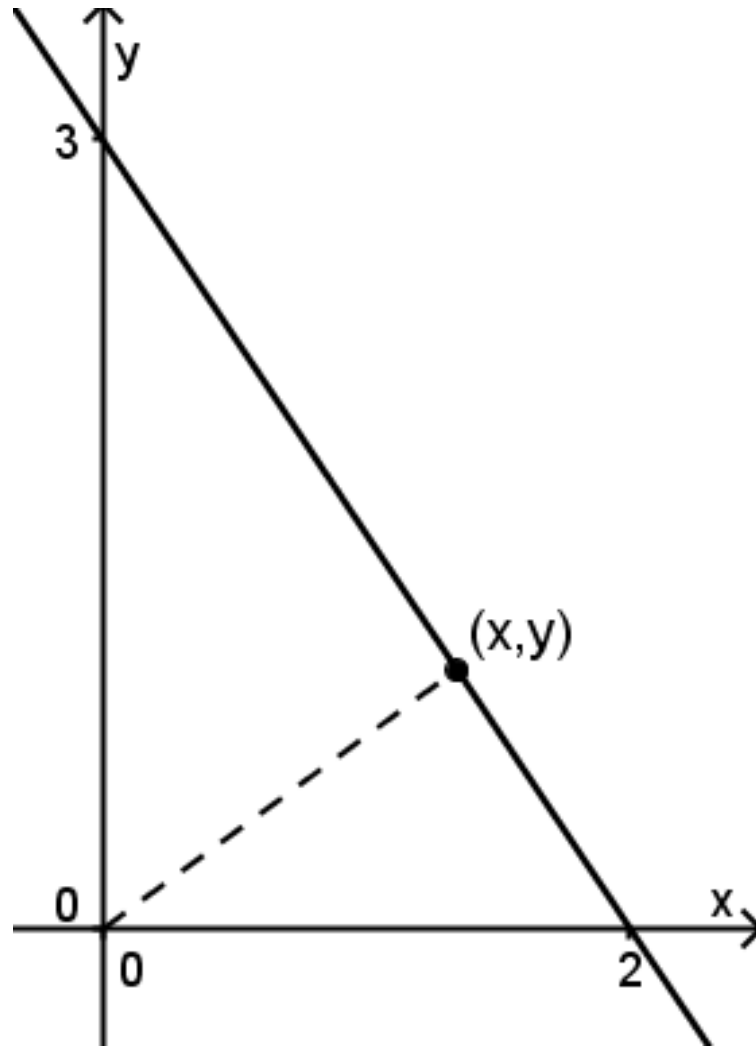
bernard.murphy@mei.org.uk

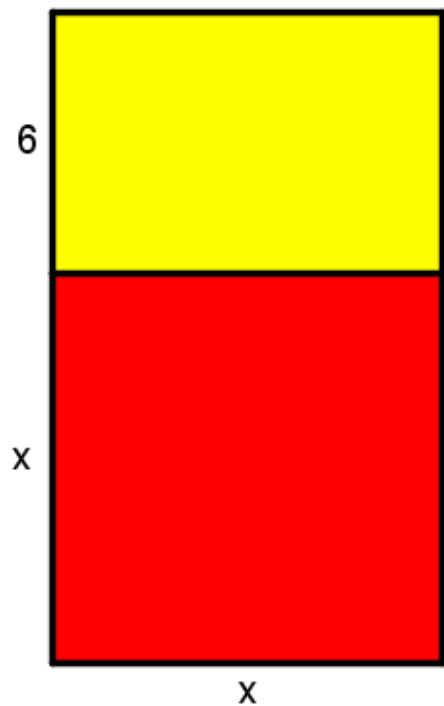
Our brains have been constructed in such a way that they are extremely concerned with vision. Vision, I understand from friends who work in neurophysiology, uses up something like 80 or 90 percent of the cortex of the brain...Understanding, and making sense of, the world that we see is a very important part of our evolution. Therefore spatial intuition or spatial perception is an enormously powerful tool and that is why geometry is actually such a powerful part of mathematics - not only for things that are obviously geometrical, but even for things that are not. We try to put them into geometrical form because that enables us to use our intuition. Our intuition is our most powerful tool... I think it is very fundamental that the human mind has evolved with this enormous capacity to absorb a vast amount of information, by instantaneous visual action, and mathematics takes that and perfects it.

Sir Michael Atiyah

**Pictures that explain concepts in Core Maths,
make me (and you, I hope) think differently
about familiar ideas or encourage students
to ask important questions themselves.**

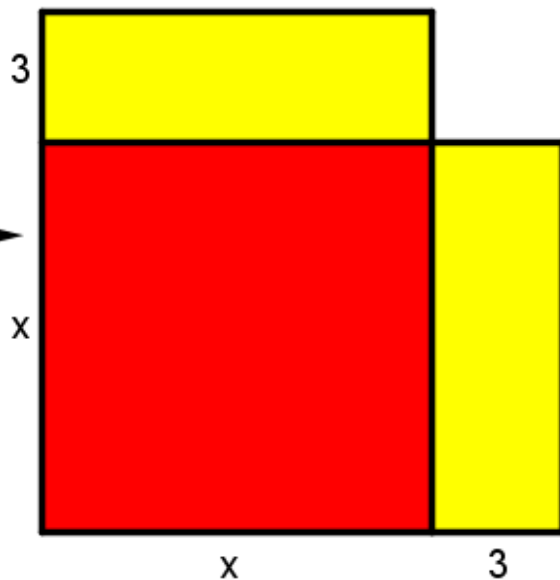
**You'll see one picture every 3 minutes.
I'll briefly explain why I like it leaving you
to discuss its benefits and limitations.**





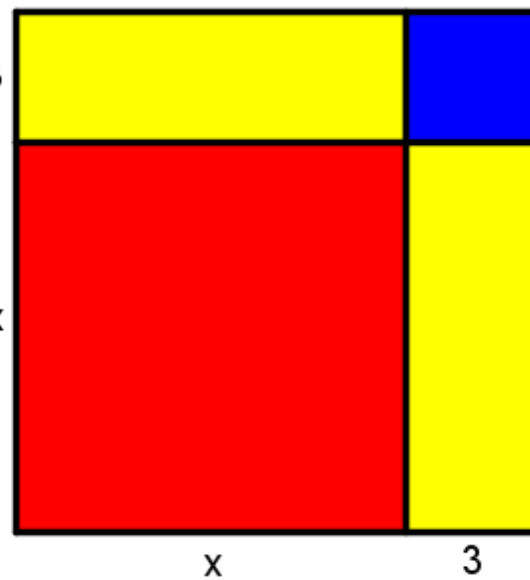
Area 91

$$x^2 + 6x = 91$$



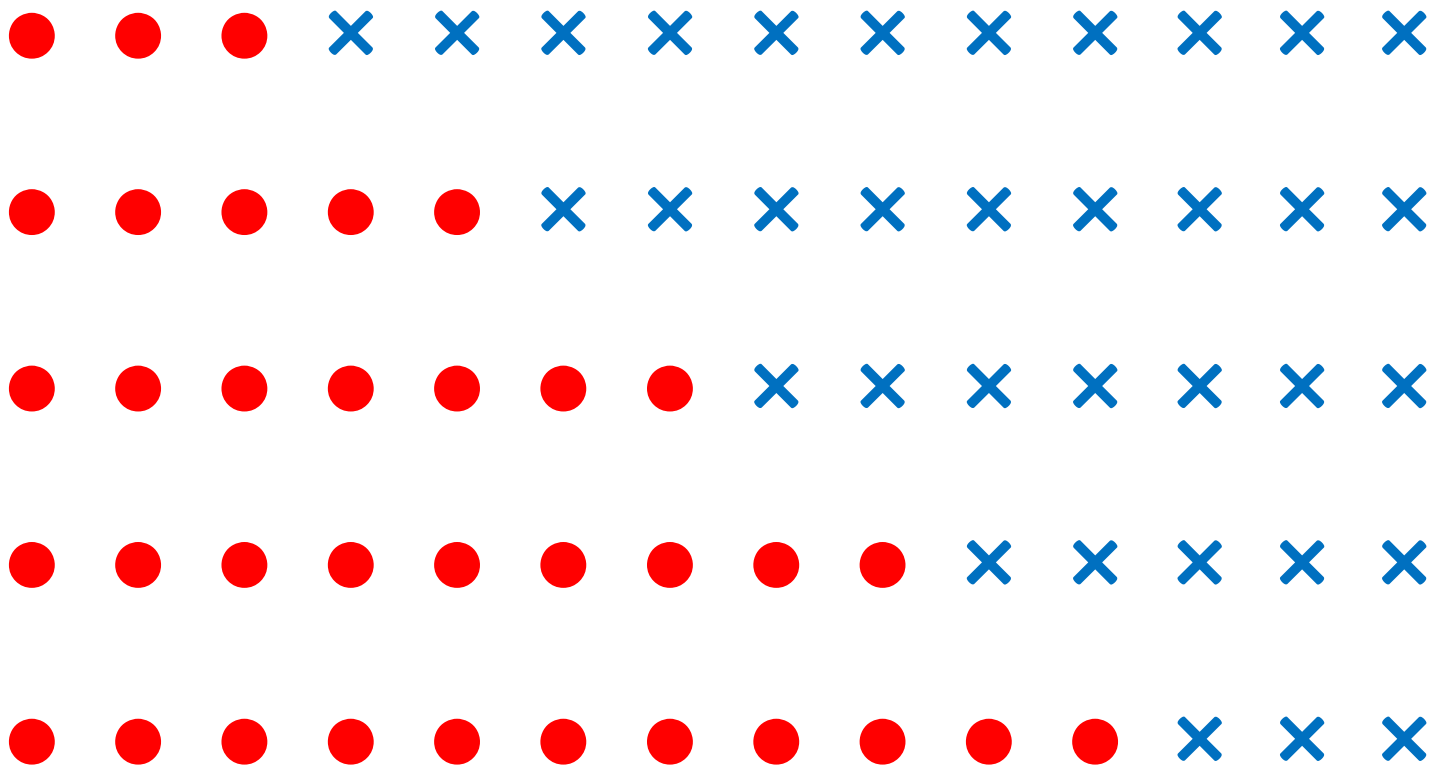
Area 91

$$x^2 + 6x = 91$$

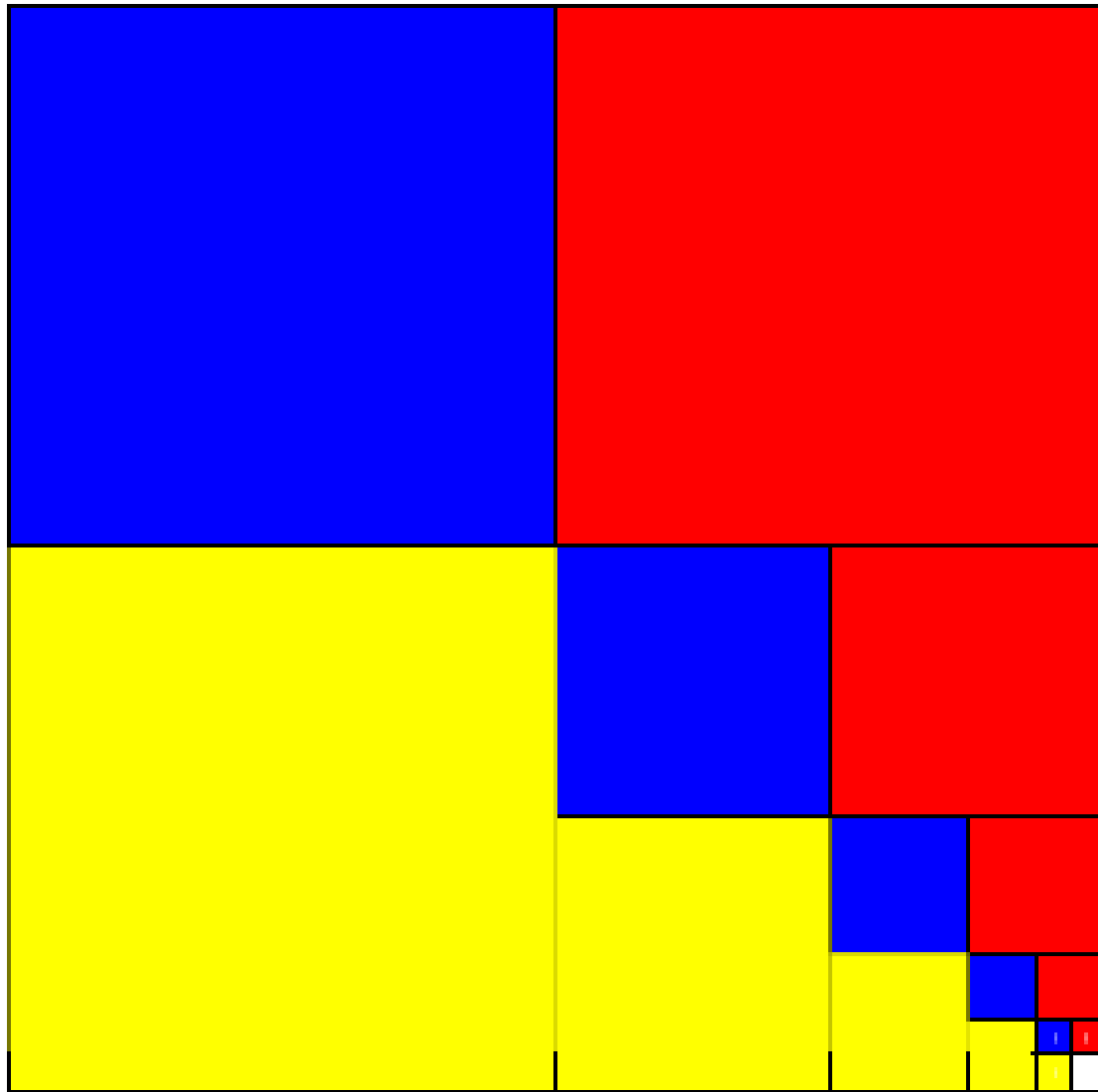


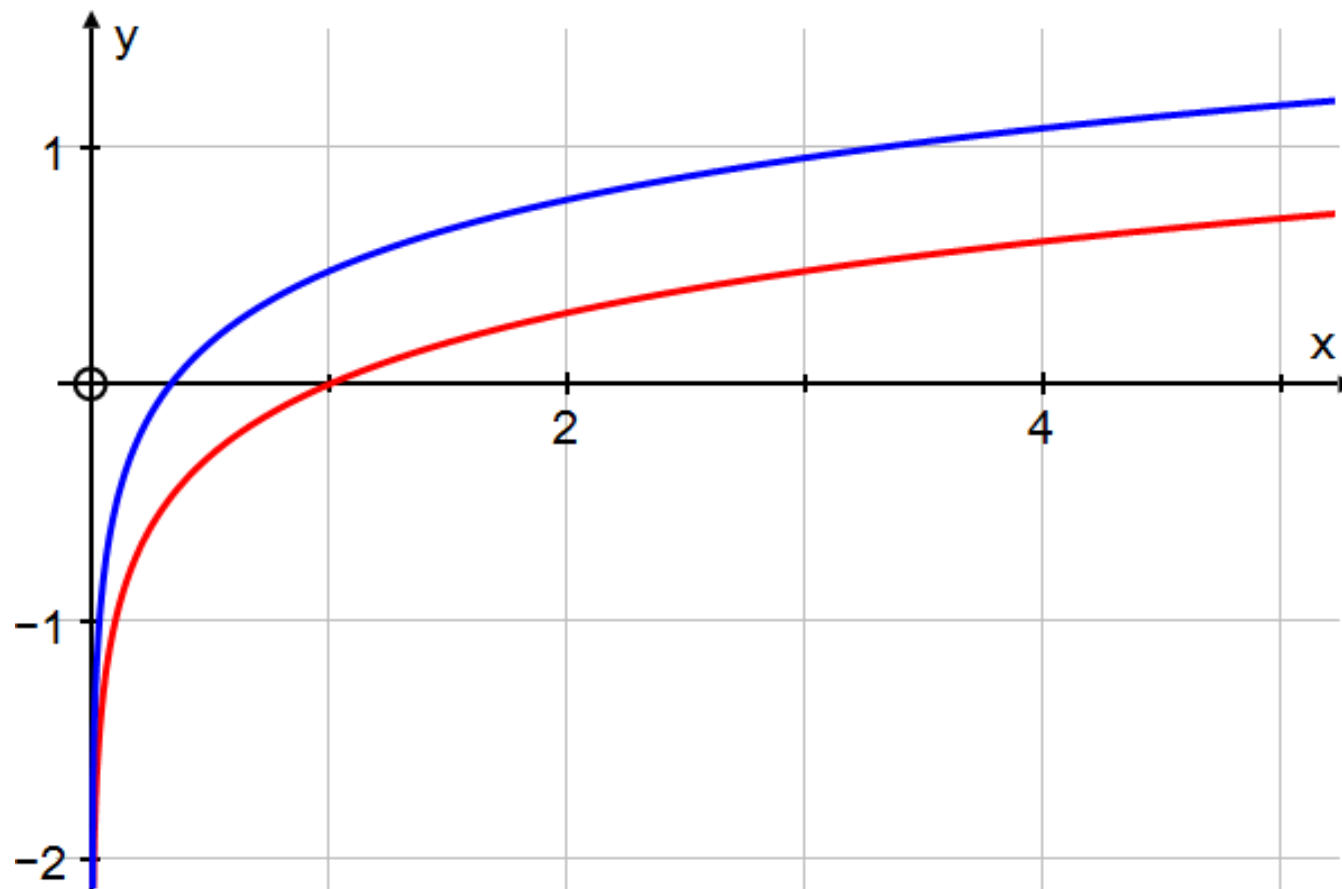
Area 100

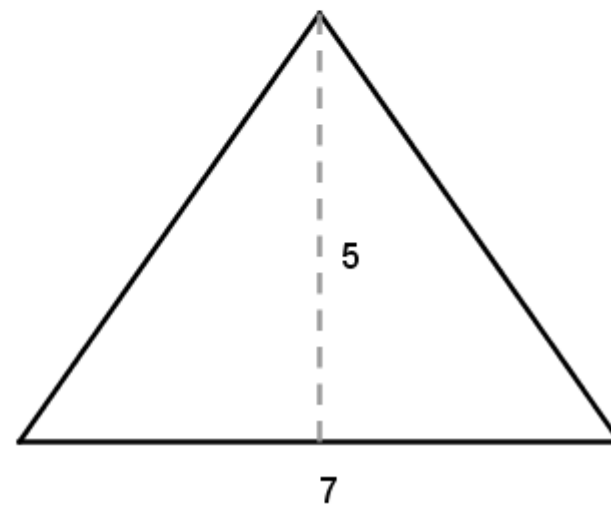
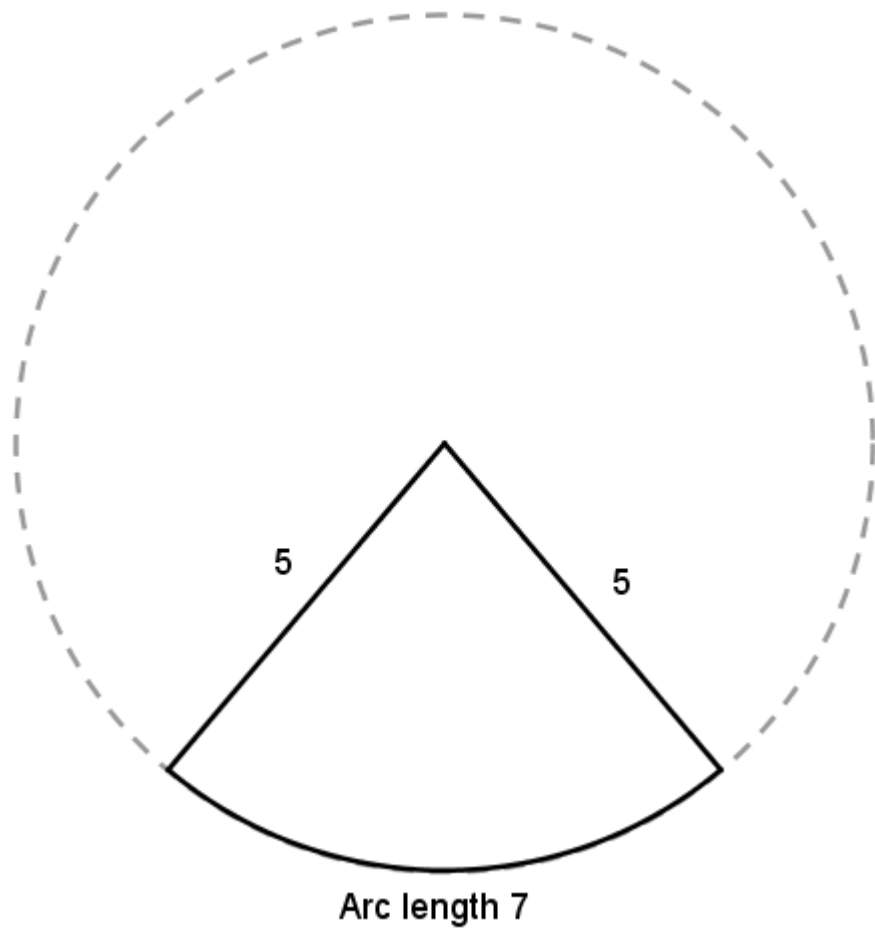
$$(x+3)^2 = 100$$

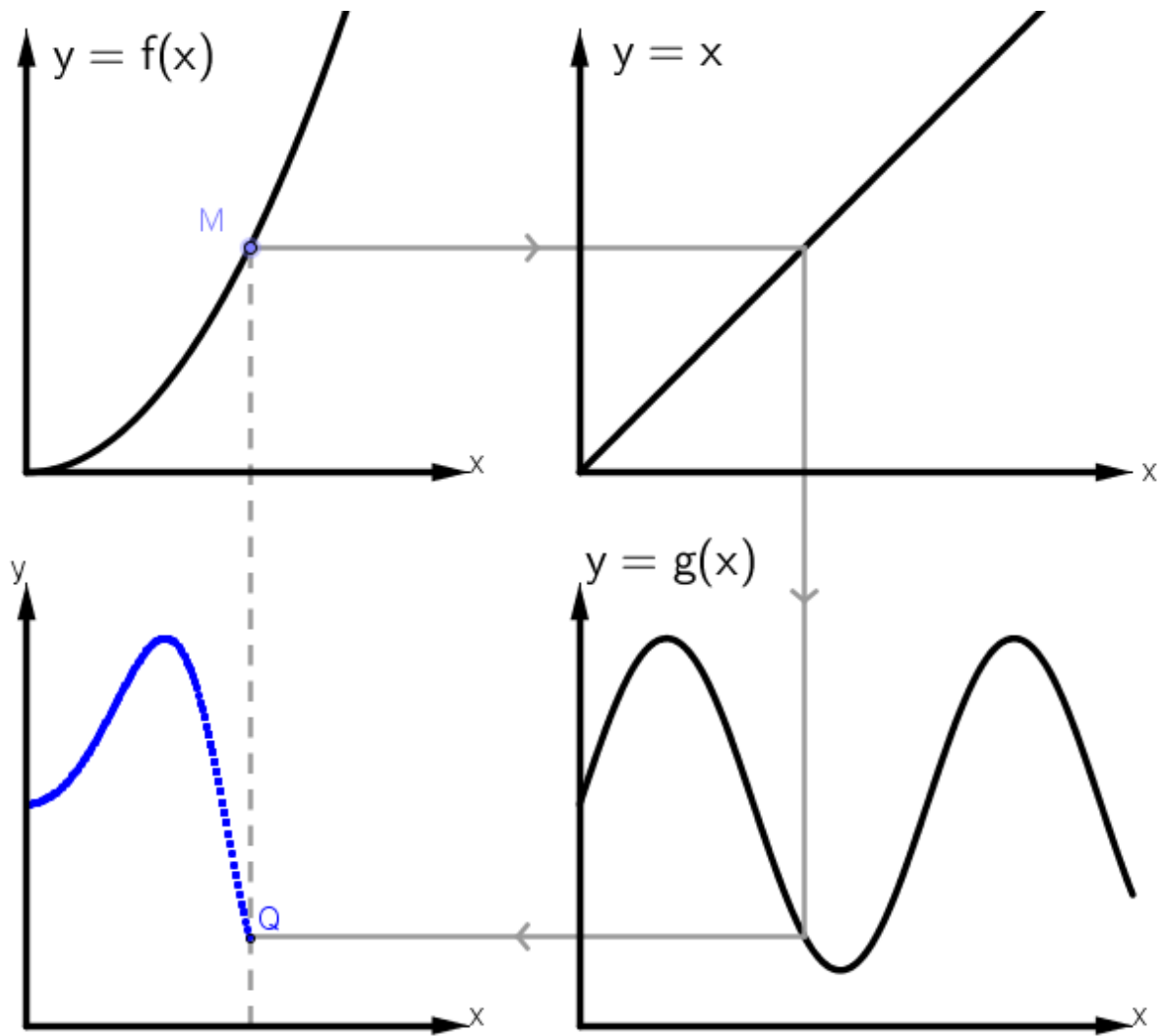


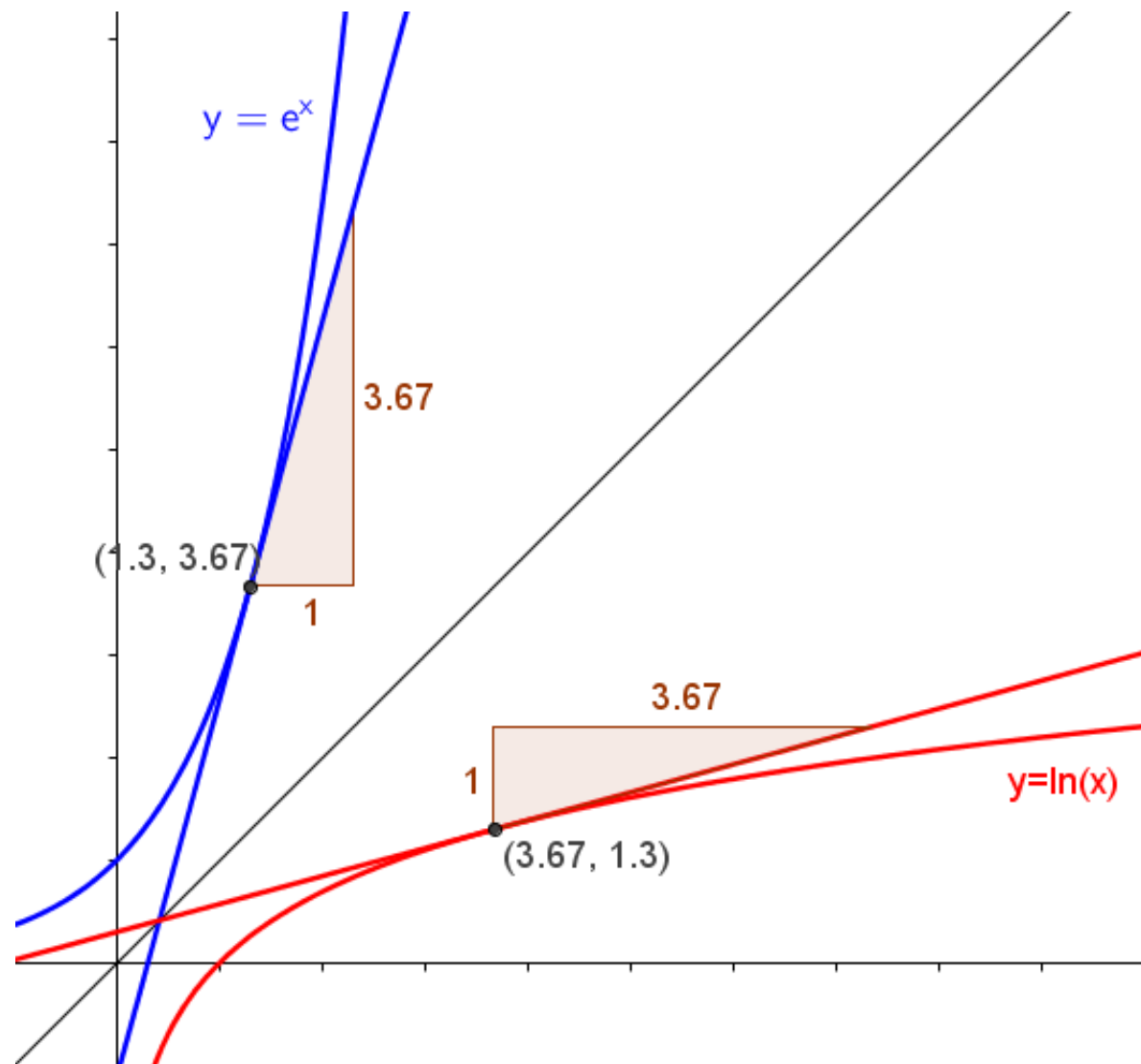
$$3 + 5 + 7 + 9 + 11 = \frac{5 \times 14}{2}$$

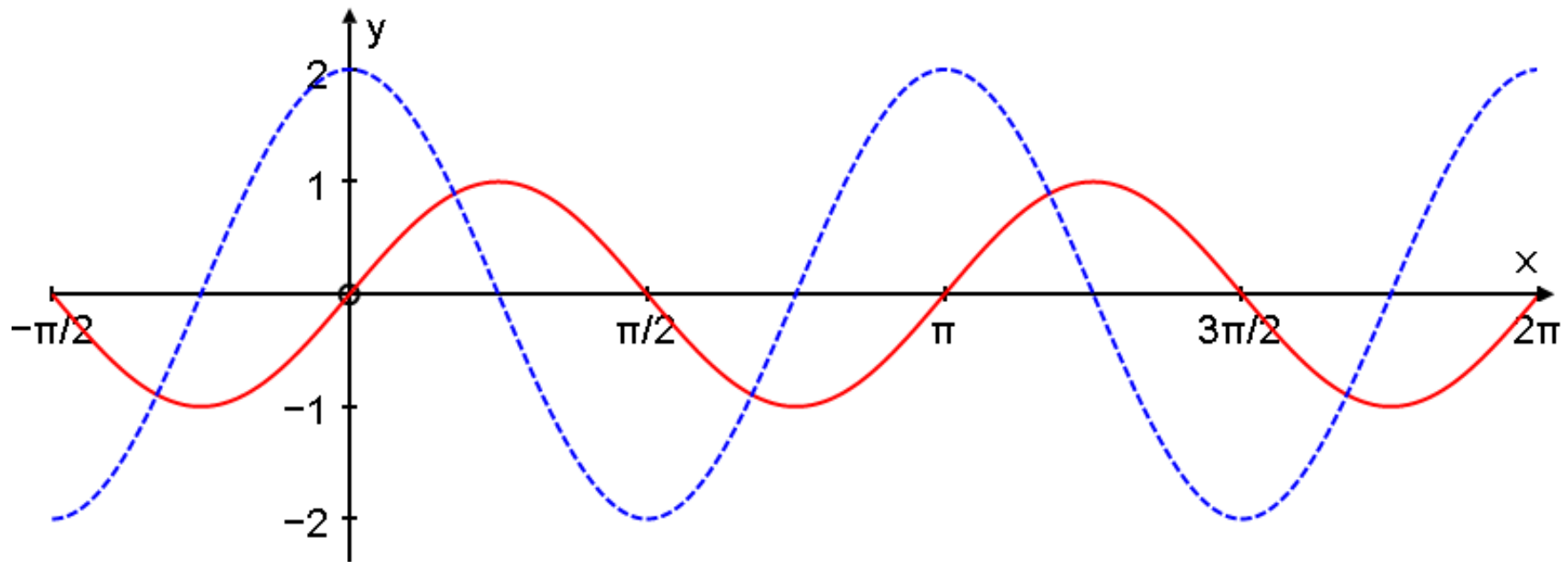




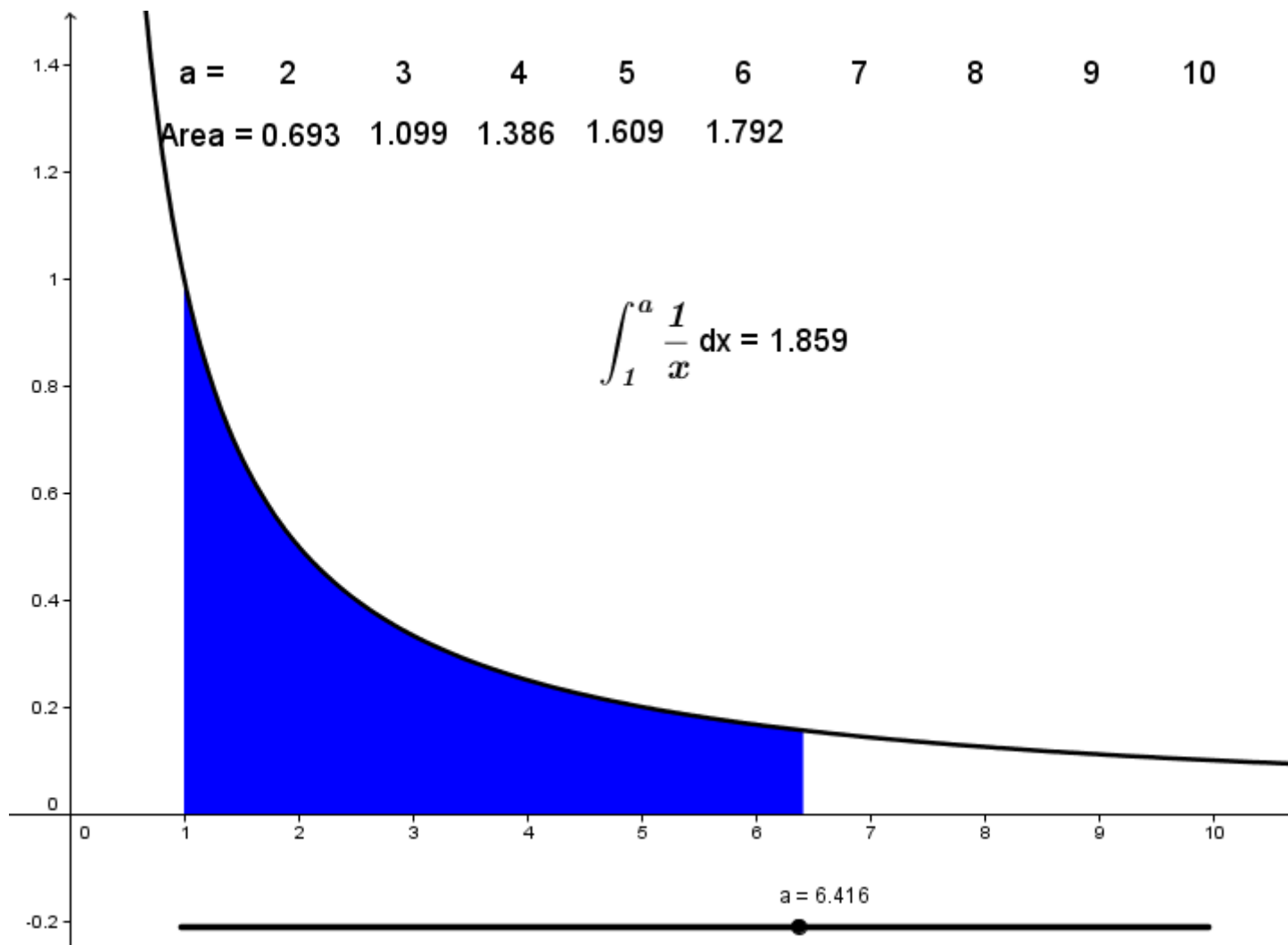


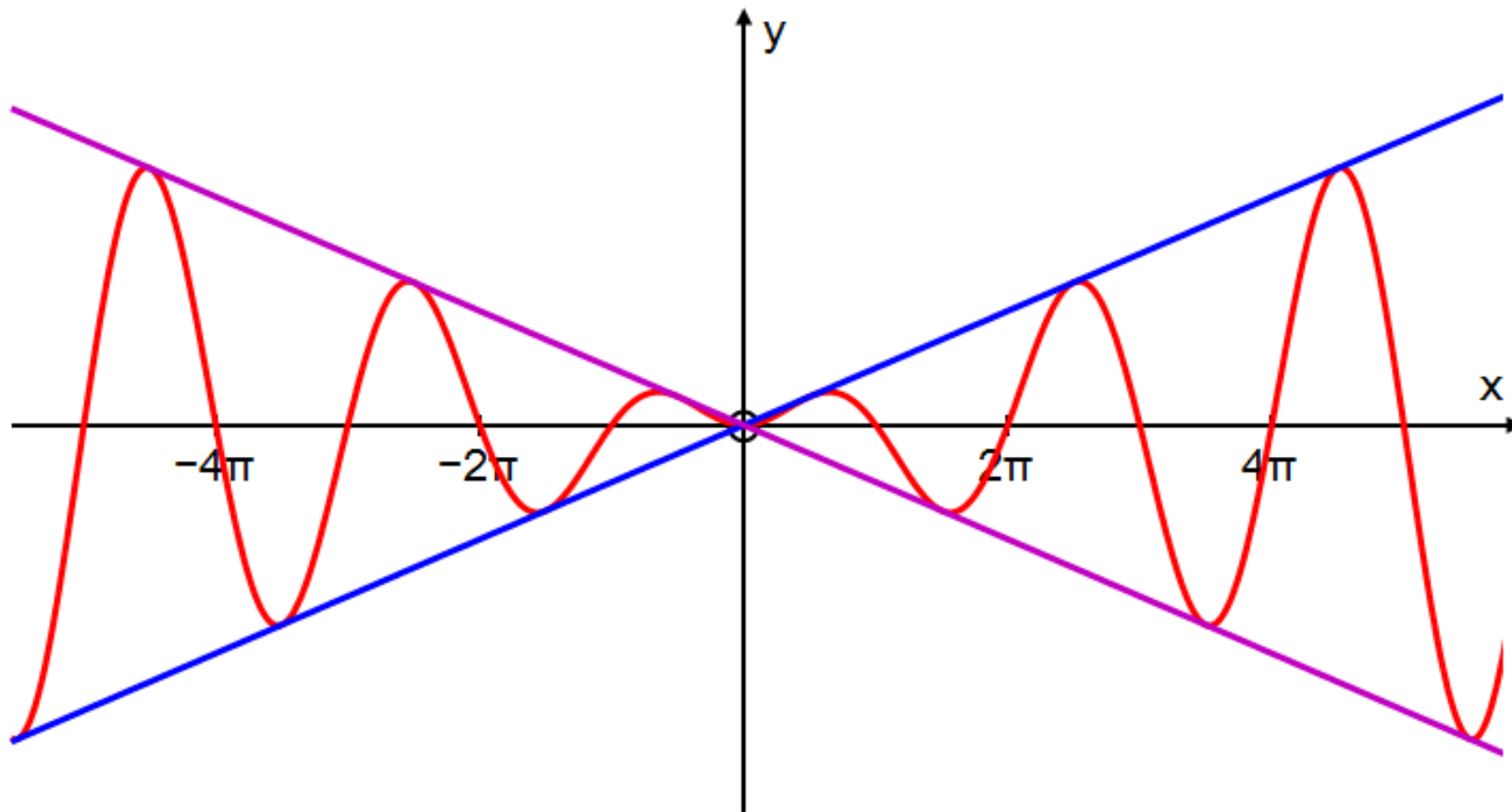






- Equation 1: $y = \sin 2x$
- Gradient 1: 1st Gradient of $y = \sin 2x$

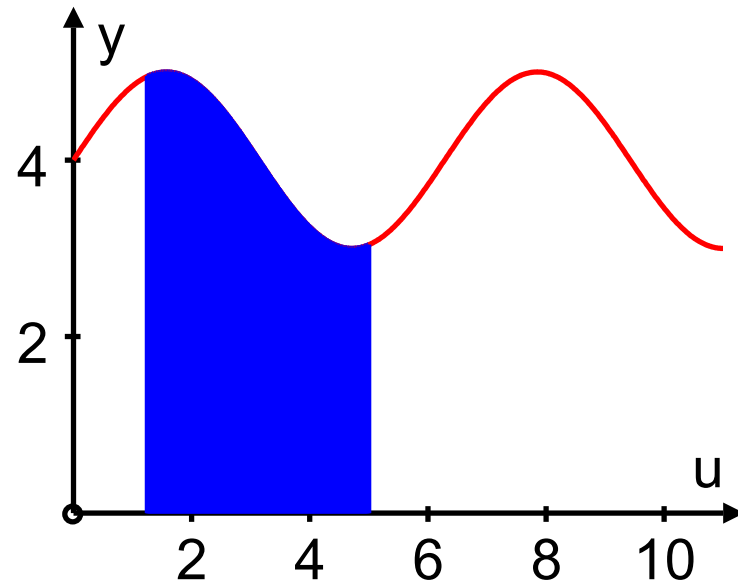
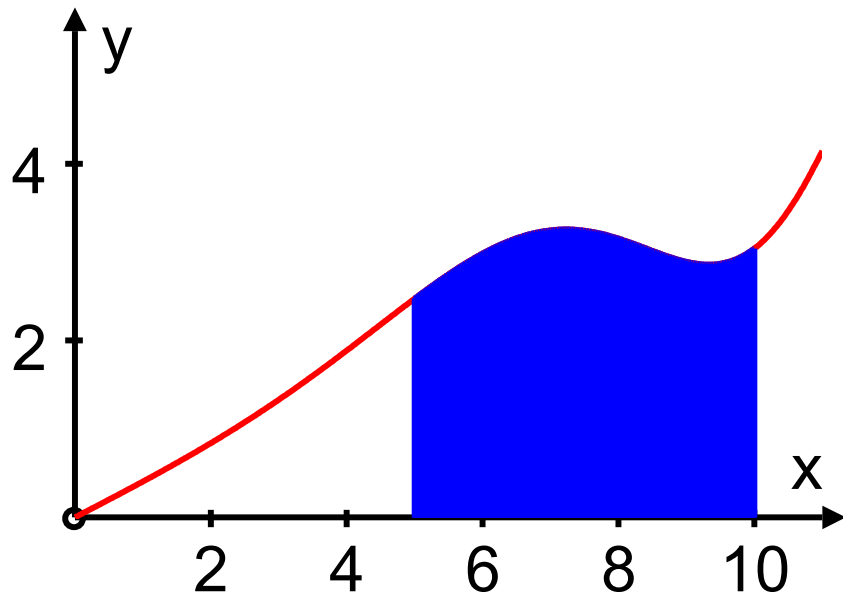


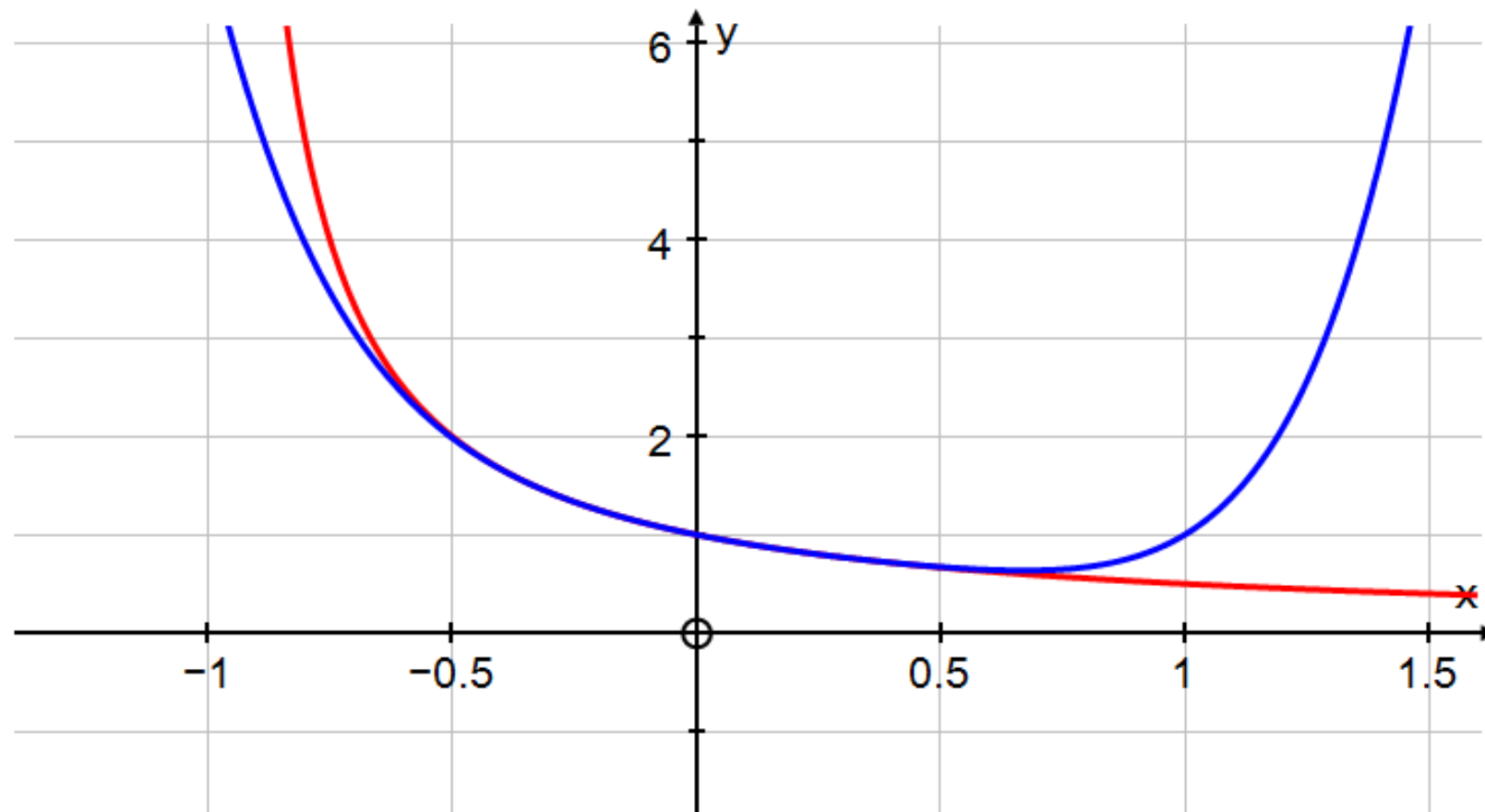


	Equation 1: $y = x \sin x$
	Equation 2: $y = x$

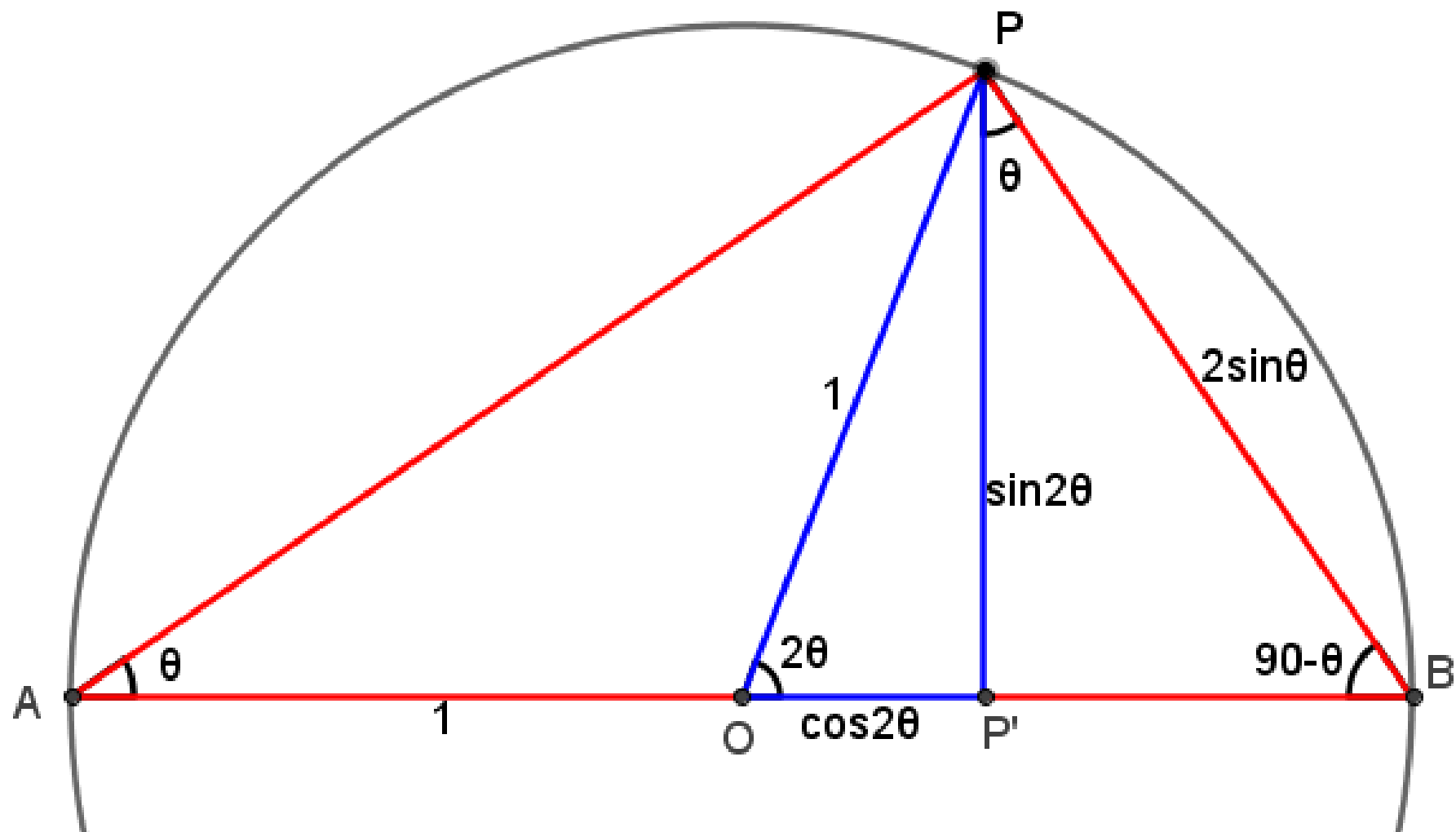
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$$\int_5^{10} \frac{x}{10} \left(4 + \sin \frac{x^2}{20} \right) dx = \int_{\frac{5}{4}}^5 (4 + \sin u) du$$

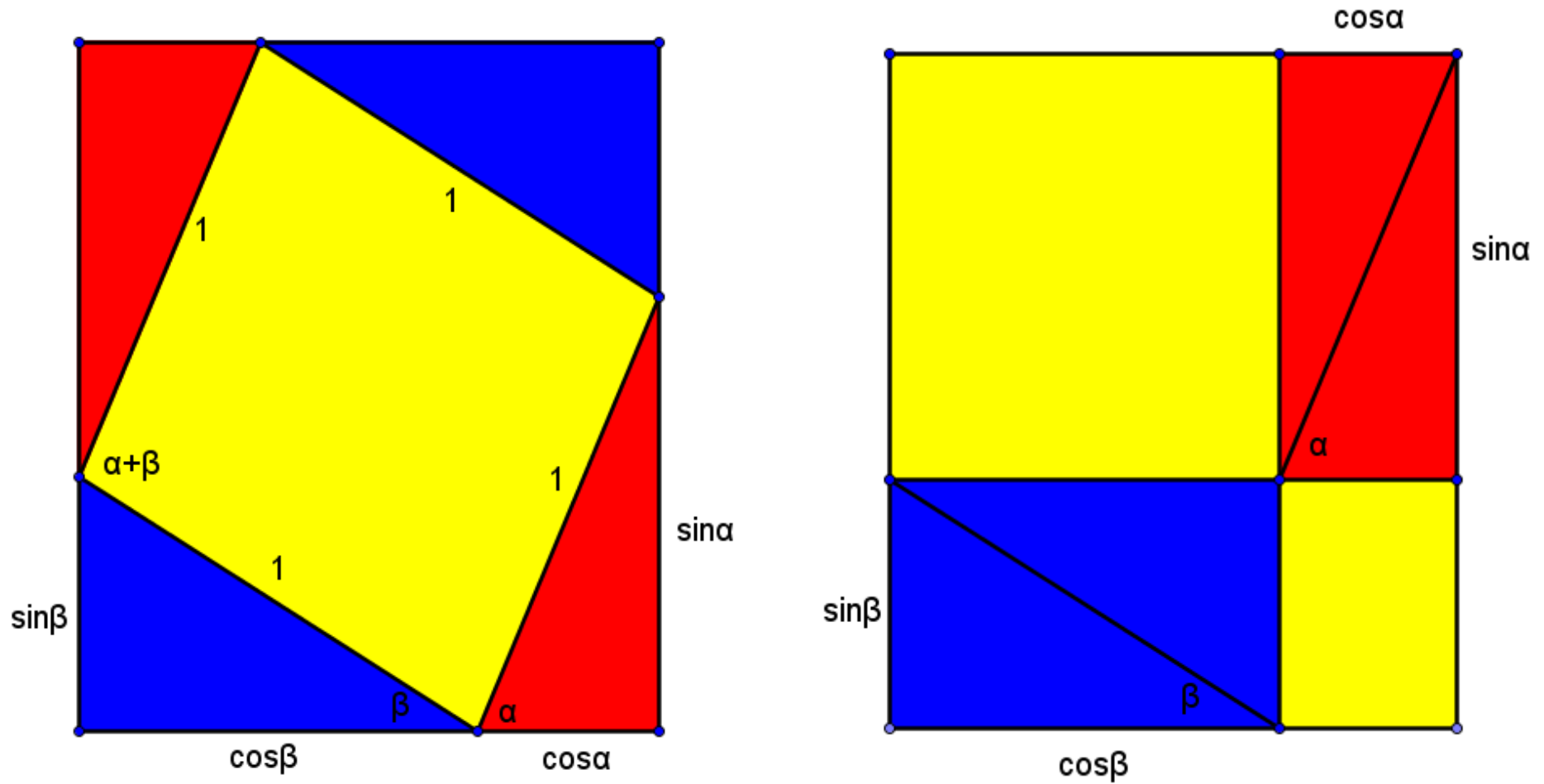




- Equation 1: $y=1/(1+x)$
- Equation 2: $y=1-x+x^2-x^3+x^4-x^5+x^6$



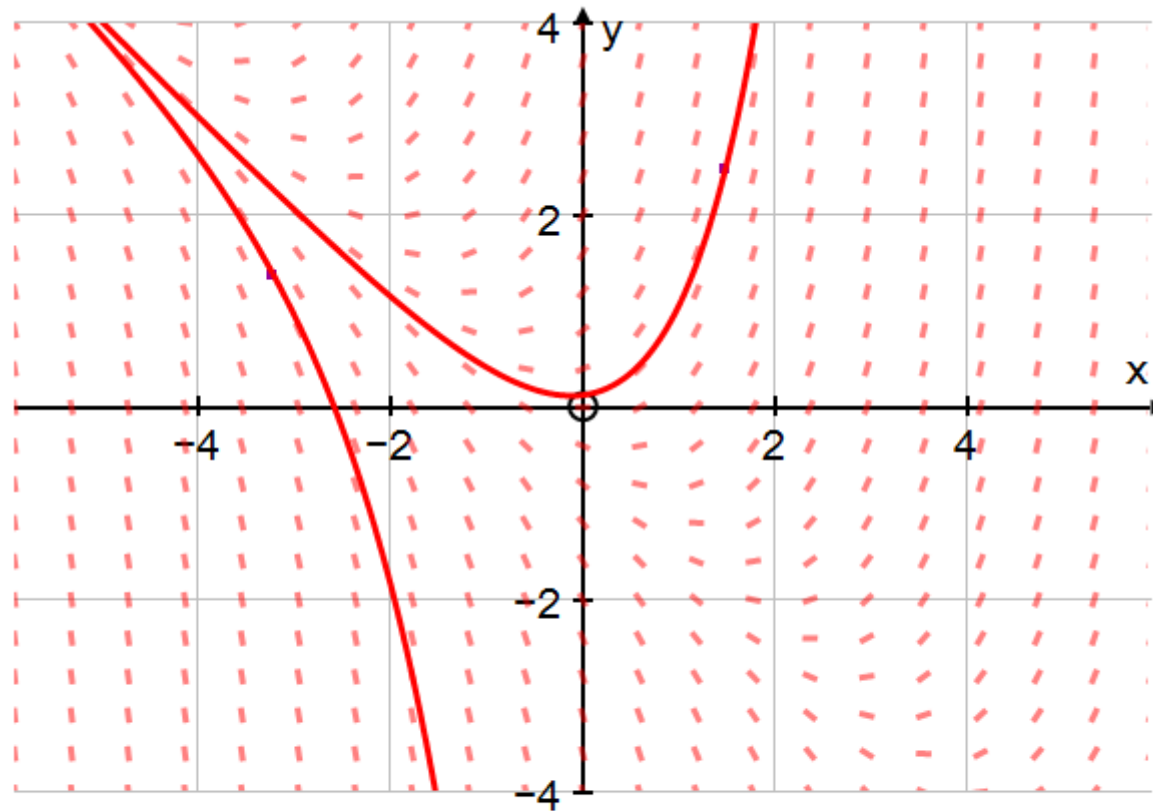
$$\sin(\alpha + \beta) = \sin \alpha \cos \beta + \cos \alpha \sin \beta$$



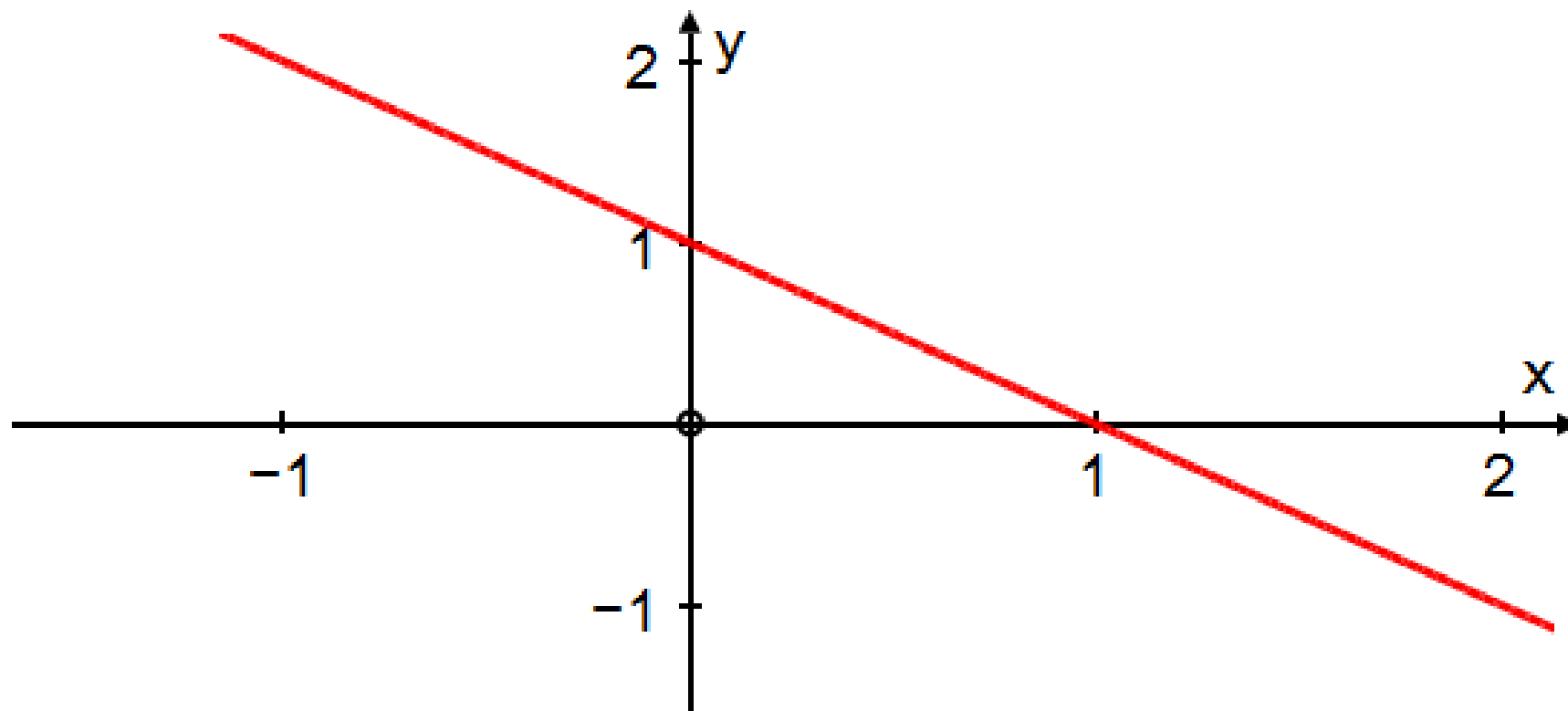
MEI 2013 Conference.


My Top 20 pictures for teaching Core Maths.

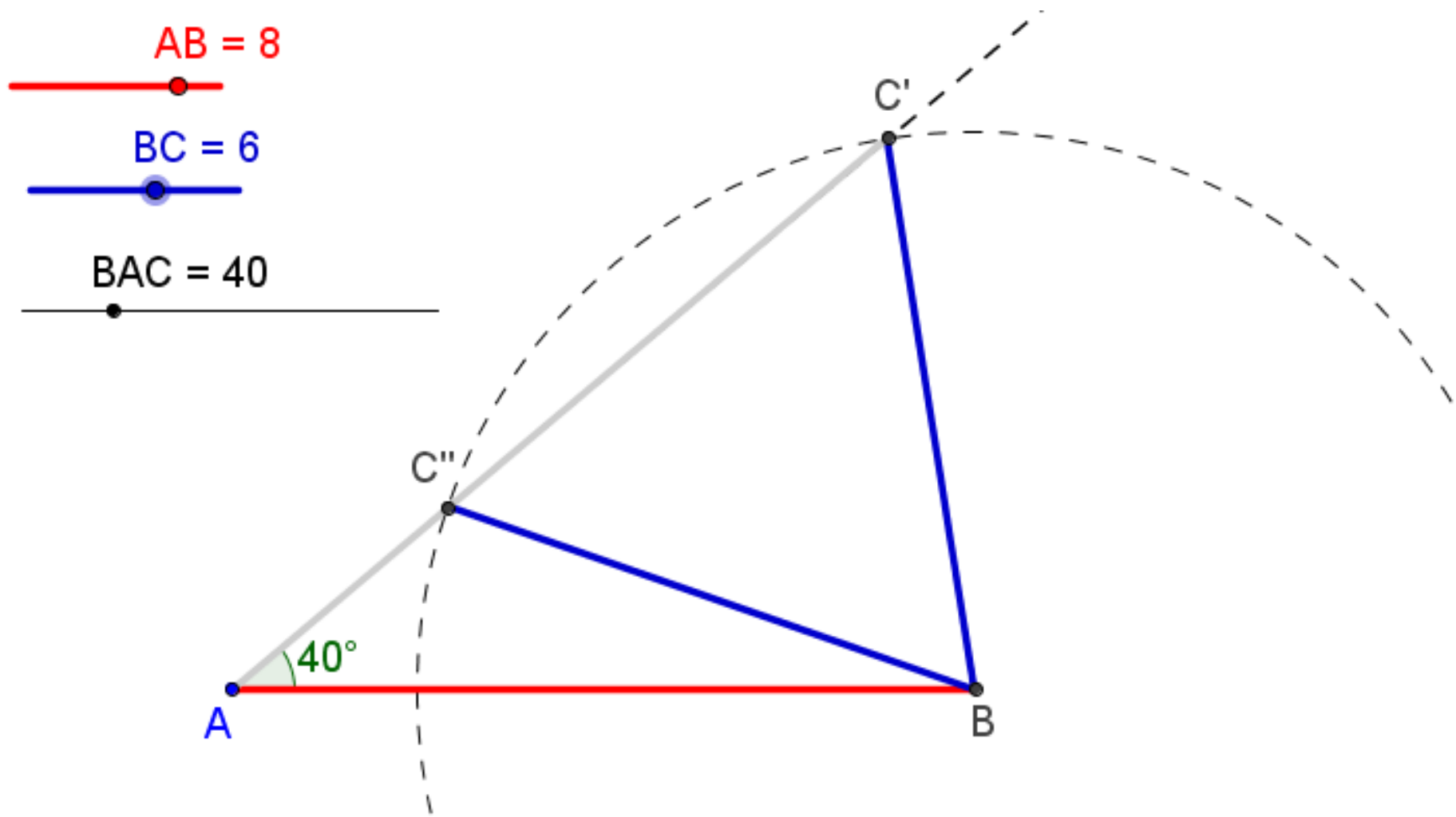
Bernard Murphy



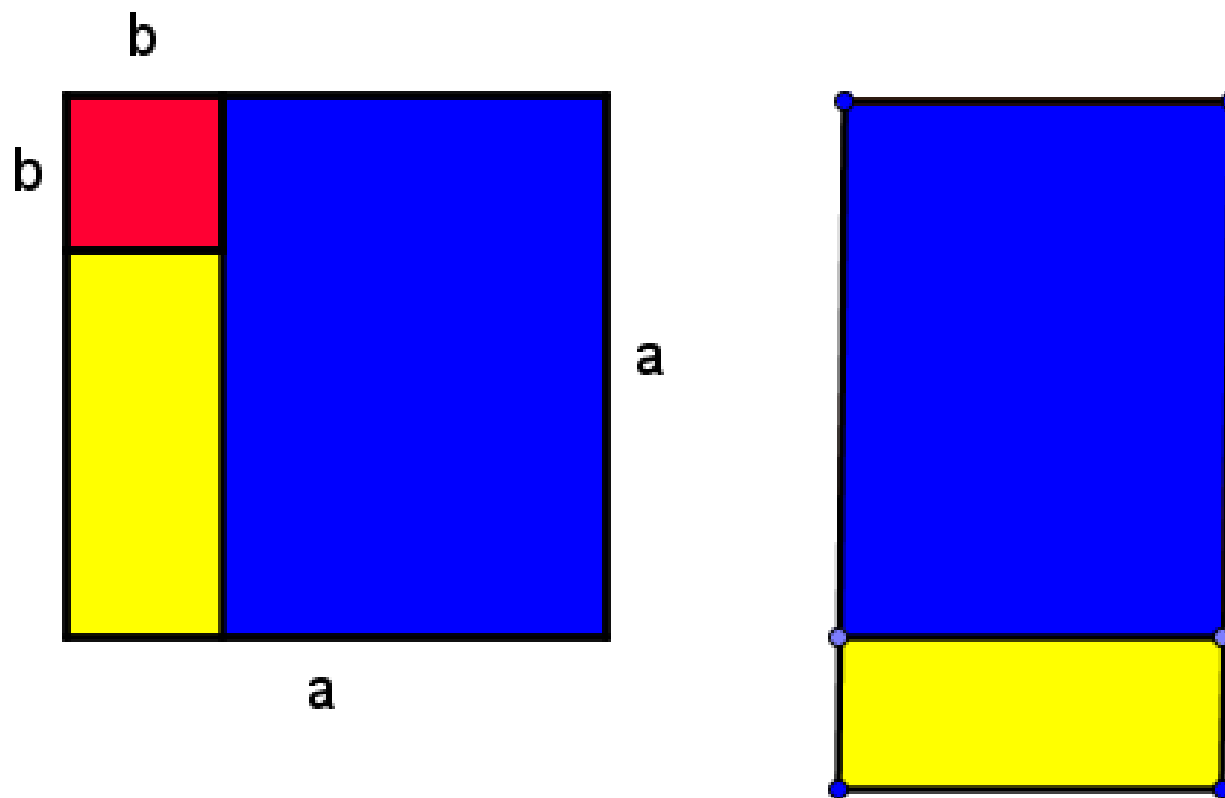
 Equation 1: $dy/dx=x+y$

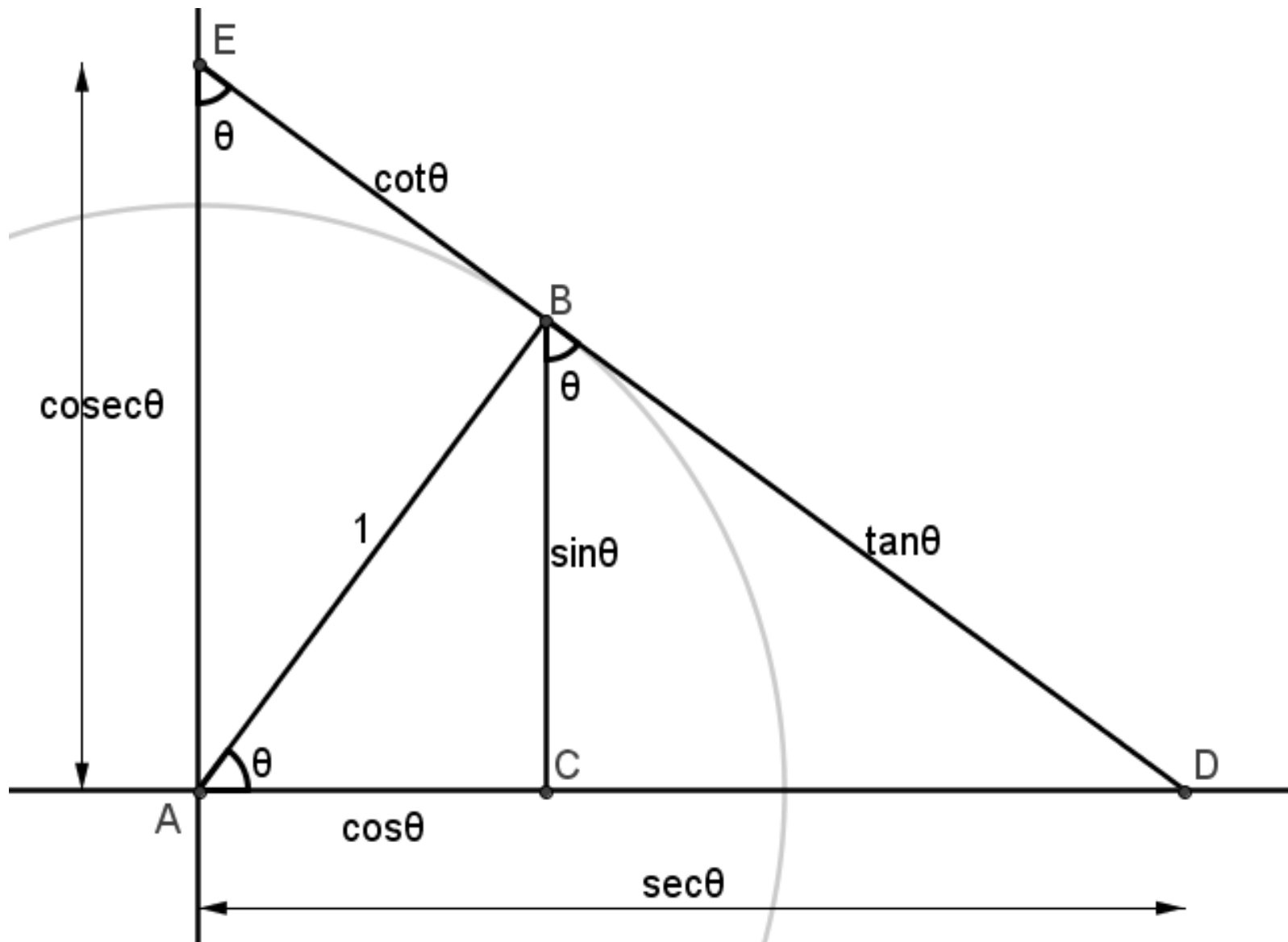


 Equation 1: $x^3+3xy+y^3=1$



$$a^2 - b^2 = (a - b)(a + b)$$





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<http://www.youtube.com/watch?v=rKNQAunZjnk&feature=youtu.be>