

IToPS

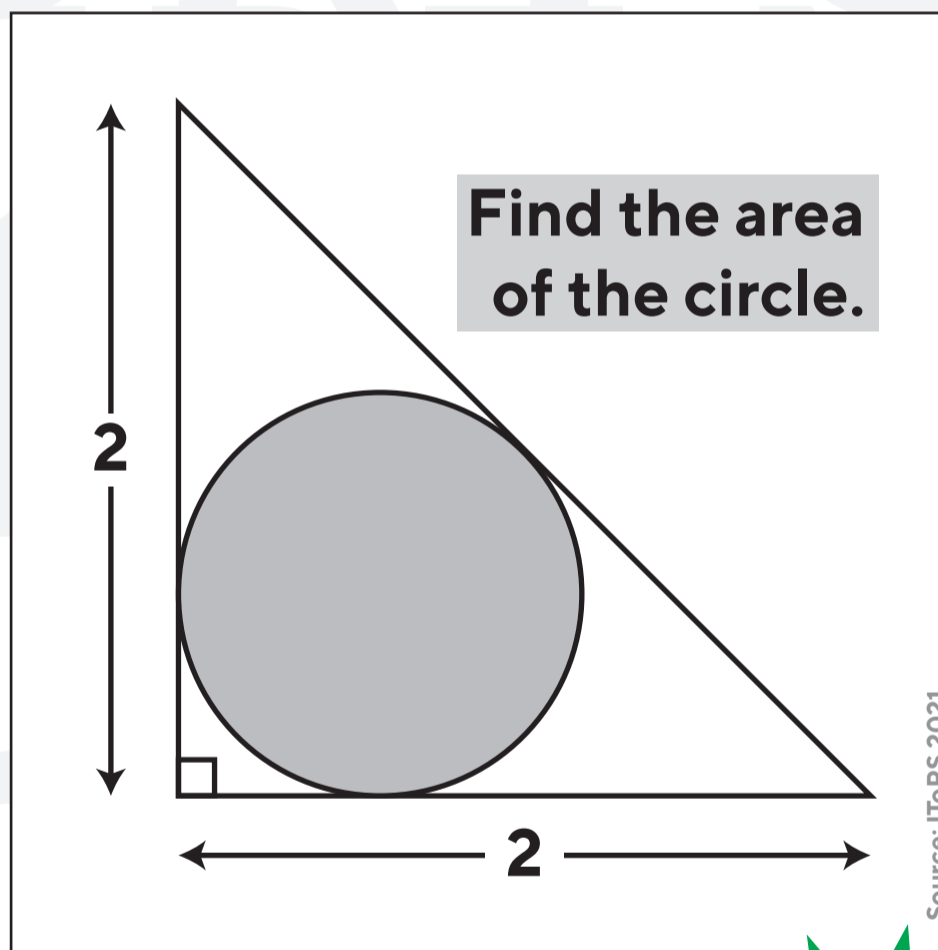
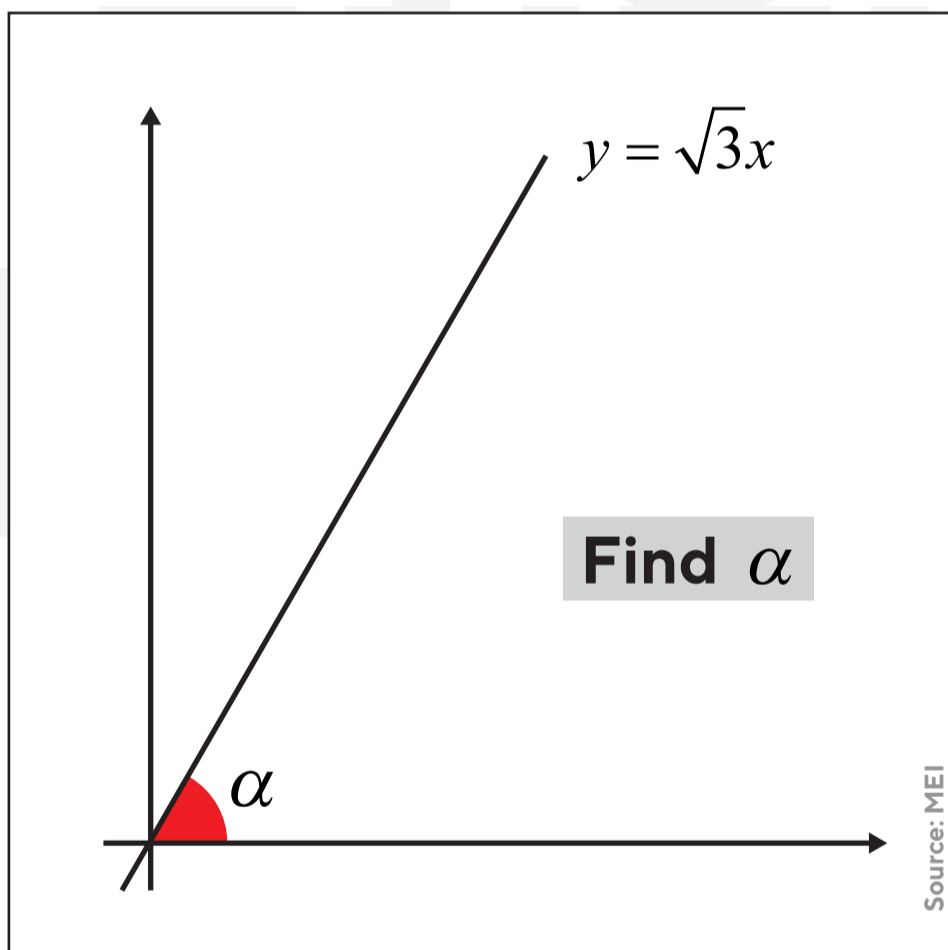


Introduction To Problem Solving



The Further Maths Support Programme Wales run a course to supplement your Maths career post A-level. If you are thinking of studying Maths or a related course at university or just for the love of Maths join this course with lots of problems to solve that will improve all your mathematical skills!

If you are thinking of taking any university entrance exams, this is the perfect introduction to them. The course will be a mix of online sessions and some face to face at different locations across Wales. Starting in the Autumn term - you can join any time!



More details & to book: furthermaths.wales/ITOPS
or email: fmspwales@swansea.ac.uk



Which is larger?
 $\sqrt{2}$ or $\sqrt[3]{3}$

Source: a Cambridge interview question



Rheolwr gan Brifysgol Abertawe, Sefydliad Gwyddorau
Cyfrifiadurol a Mathemategol Cymru
Managed by Swansea University, Wales Institute
of Mathematical and Computational Sciences

furthermaths.wales



fmspwales@swansea.ac.uk



youtube.com/c/RhGMBCFMSPW



[@RhGMBC_FMSPW](https://twitter.com/RhGMBC_FMSPW)

AS & A2
videos here



MAT



Preparing for the Mathematics Admissions Test



Developing your problem-solving skills and strategies further, this 5 session course helps equip you for Oxford's Mathematics Admission Test, as well building your problem-solving armoury even further.

The course will be a series of online sessions. Running during the summer and into the autumn term.

Which of the following sketches is a graph of $x^4 - y^2 = 2y + 1$?

a)

b)

c)

d)

Source: www.maths.ox.ac.uk

The function f , defined for whole positive numbers, satisfies $f(1) = 1$ and also the rules $f(2n) = 2f(n)$ and $f(2n+1) = 4f(n)$ for all values of n .

How many numbers satisfy $f(n) = 16$?

a) 3, b) 4, c) 5, d) 6

Source: www.maths.ox.ac.uk

More details & to book: furthermaths.wales/MAT or email: fmspwailes@swansea.ac.uk



What is the total of the digit sums of the integers from 0 to 999 inclusive?

Source: www.maths.ox.ac.uk



Rheolwr gan Brifysgol Abertawe, Sefydliad Gwyddorau Cyfrifiadurol a Mathemategol Cymru
Managed by Swansea University, Wales Institute of Mathematical and Computational Sciences

furthermaths.wales



fmspwailes@swansea.ac.uk



youtube.com/c/RhGMBCFMSPW



[@RhGMBC_FMSPW](https://twitter.com/RhGMBC_FMSPW)

AS & A2 videos here



STEP



Equip yourself for the STEP papers

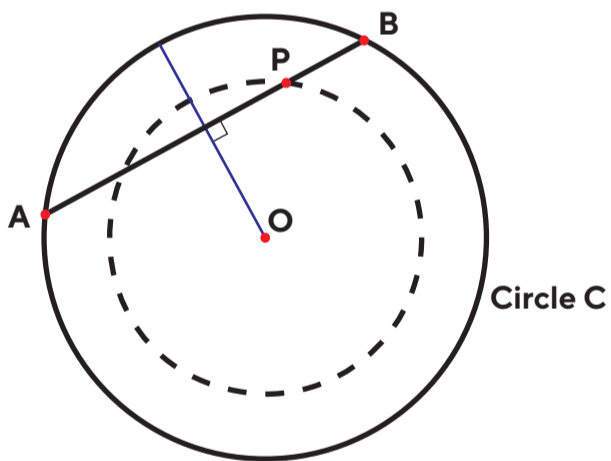


Preparing for the most demanding of examinations in the UK for students of pre-university years. This course will introduce you to the Sixth Term Examination Papers and set you on the path to understanding your way around some of these great challenges.

The course will be a mix of online sessions and some face to face at different locations across Wales. Starting in the Autumn term - you can join any time!

The diagram shows a circle C with centre O , and a rod AB the ends of which can slide round the circle C . The radius of the circle is R and the length of the rod is $2a$.

As the rod slides round C the point P , which is a fixed distance b from the centre of the rod, traces out a circle with centre O of radius r .



Show that the area between the two circles is $\pi(a^2 - b^2)$

Source: <https://maths.org/step/>

a) Given that

$$P(x) = Q(x)R'(x) - Q'(x)R(x)$$

write down an expression for

$$\int \frac{P(x)}{(Q(x))^2} dx$$

b) By choosing the function $R(x)$ to be of the form

$$a + bx + cx^2$$

find

$$\int \frac{5x^2 - 4x - 3}{(1 + 2x + 3x^2)^2} dx$$

Source: <https://maths.org/step/>

More details & to book: furthermaths.wales/STEP or email: fmspwales@swansea.ac.uk



The infinite series S is given by $S = 1 + (1+d)r + (1+2d)r^2 + \dots + (1+nd)r^n + \dots$ for $|r| < 1$.
By considering $S - rS$ or otherwise prove that $S = \frac{1}{1-r} + \frac{rd}{(1-r)^2}$

Source: <https://maths.org/step/>



Rheolwr gan Brifysgol Abertawe, Sefydliad Gwyddorau Cymru
Managed by Swansea University, Wales Institute of Mathematical and Computational Sciences

furthermaths.wales



fmspwales@swansea.ac.uk



youtube.com/c/RhGMBCFMSPW



[@RhGMBC_FMSPW](https://twitter.com/RhGMBC_FMSPW)

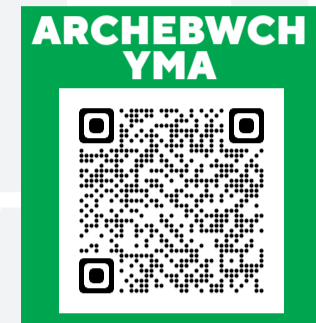
AS & A2 videos here



D P

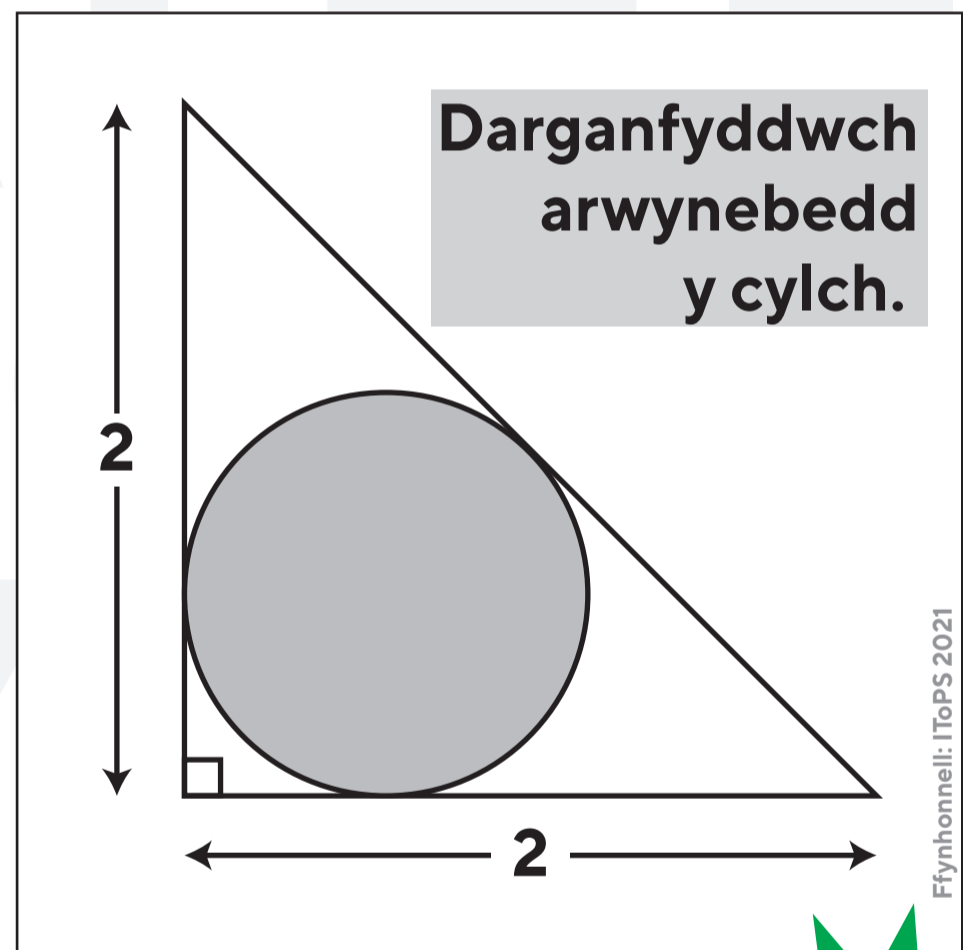
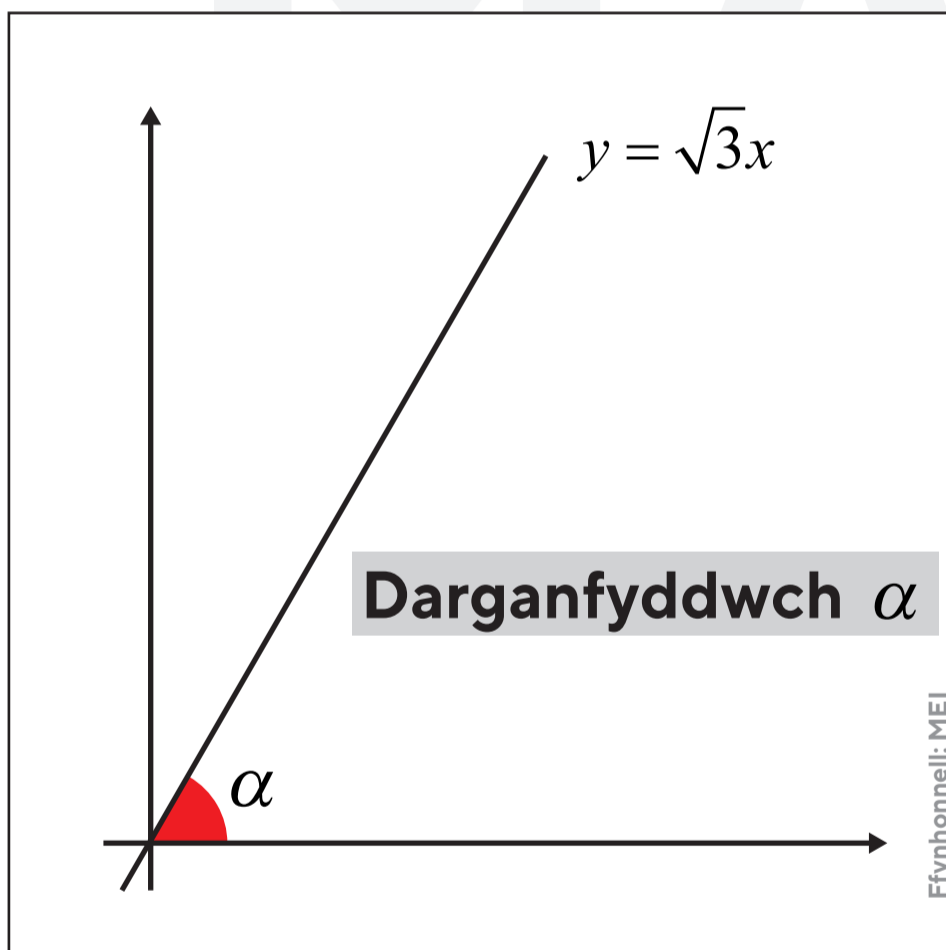


Cyflwyniad I Ddatrys Problemau

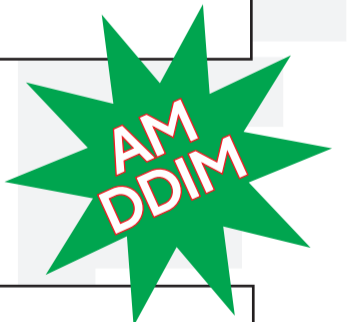


Mae Rhaglen Gymorth Mathemateg Bellach Cymru yn cynnal cwrs i ychwanegu at eich gyrfa Mathemateg wedi'r safon uwch. Os ydych chi'n ystyried astudio Mathemateg neu gwrw cysylltiedig yn y brifysgol neu fod gennych gariad at Fathemateg ymunwch â'r cwrs hwn gyda llawer o broblemau i'w datrys a fydd yn gwella eich holl sgiliau mathemategol!

Os ydych chi'n ystyried sefyll unrhyw arholiadau mynediad prifysgol, dyma'r cyflwyniad perffaith iddyn nhw. Cymysgedd o sesiynau ar-lein fydd y cwrs a rhai wyneb yn wyneb mewn gwahanol leoliadau ledled Cymru. Dechrau yn nhymer yr Hydref - cewch ymuno unrhyw bryd!



Mwy o fanylion & i archebu: : furthermaths.wales/cy/dp
neu email: fmspwailes@swansea.ac.uk



Pa un sydd fwyaf?

$\sqrt{2}$ neu $\sqrt[3]{3}$

Ffynhonnell: Cwestiwn cyfweiliad Caergrawnt



Rheolwr gan Brifysgol Abertawe, Sefydliad Gwyddorau
Cyfrifiadurol a Mathemategol Cymru
Managed by Swansea University, Wales Institute
of Mathematical and Computational Sciences



mathsbellach.cymru



fmspwailes@swansea.ac.uk



youtube.com/c/RhGMBCFMSPW



[@RhGMBC_FMSPW](https://twitter.com/RhGMBC_FMSPW)

Fideos
UG & A2 yma



MAT



Paratoi ar gyfer y Prawf Derbyniad Mathemateg (MAT)



Datblygu eich sgiliau a'ch strategaethau datrys problemau ymhellach, mae'r cwrs 5 sesiwn hwn yn helpu i'ch arfogi ar gyfer Prawf Derbyniad Mathemateg Rhydychen, yn ogystal ag adeiladu eich arfwisg datrys problemau hyd yn oed ymhellach.

Cyfres o sesiynau ar-lein fydd y cwrs. Yn rhedeg yn ystod yr haf ac i mewn i dymor yr hydref.

Pa un o'r brasluniau canlynol sy'n graff o $x^4 - y^2 = 2y + 1$?

a)

b)

c)

d)

Ffynhonnell: www.maths.ox.ac.uk

Mae'r ffwythiant f ,
a ddiffinir ar gyfer cyfanrifau positif,
yn bodloni
 $f(1) = 1$
a hefyd y rheolau
 $f(2n) = 2f(n)$
 $f(2n+1) = 4f(n)$
ar gyfer holl werthoedd n .

Faint o rifau
sy'n bodloni $f(n) = 16$?

a) 3, b) 4, c) 5, d) 6

Ffynhvaonell: www.maths.ox.ac.uk

Mwy o fanylion & i archebu: : furthermaths.wales/cy/MAT
neu email: fmspwailes@swansea.ac.uk

AM
DDIM

Beth yw cyfanswm y symiau digid
o'r cyfanrifau o 0 i 999 yn gynhwysiedig?

Ffynhonnell: www.maths.ox.ac.uk



Rheolir gan Brifysgol Abertawe, Sefydliad Gwyddorau
Cyfrifadurol a Mathemategol Cymru
Managed by Swansea University, Wales Institute
of Mathematical and Computational Sciences



mathsbellach.cymru



fmspwailes@swansea.ac.uk



youtube.com/c/RhGMBCFMSPW



[@RhGMBC_FMSPW](https://twitter.com/RhGMBC_FMSPW)

Fideos
UG & A2 yma



STEP



WEDI ANELU AT
FLWYDDYN 13
OND CROESO I BAWB

Arfogi eich hun ar gyfer y papurau **STEP**

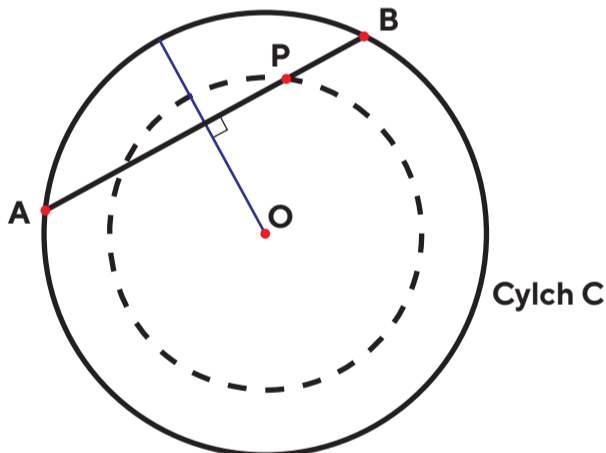


Paratoi ar gyfer y mwyaf heriol o'r arholiadau yn y DU ar gyfer myfyrwyr blynyddoedd cyn-brifysgol. Bydd y cwrs hwn yn eich cyflwyno i Bapurau Arholiad y Chweched Tymor ac yn eich gosod ar y llwybr i ddeall eich ffordd o amgylch rhai o'r heriau mawr hyn.

Bydd y cwrs yn gymysgedd o sesiynau ar-lein a rhai wyneb yn wyneb mewn gwahanol leoliadau ledled Cymru. Yn dechrau yn nhymer yr Hydref - gallwch ymuno unrhyw bryd!

Mae'r diagram yn dangos cylch C canol O, a rhoden AB y mae ei ddau ben yn gallu llithro o amgylch y cylch C.
Radiws y cylch yw R a hyd y rhoden yw 2a.

Wrth i'r roden lithro o amgylch C mae'r pwynt P, sy'n bellter sefydlog b o ganol y rhoden, yn amlinellu cylch canol O a radiws r.



Dangoswch fod yr arwynebedd rhwng y ddau gylch yn $\pi(a^2 - b^2)$

Ffynhonnell: <https://maths.org/step/>

a) O wybod bod

$$P(x) = Q(x)R'(x) - Q'(x)R(x)$$

ysgrifennwch fynegiad ar gyfer

$$\int \frac{P(x)}{(Q(x))^2} dx$$

b) Drwy ddewis y ffwythiant $R(x)$ i fod o'r ffurf

$$a + bx + cx^2$$

carganfyddwch

$$\int \frac{5x^2 - 4x - 3}{(1 + 2x + 3x^2)^2} dx$$

Ffynhonnell: <https://maths.org/step/>

Mwy o fanylion & i archebu: : furthermaths.wales/STEP1
neu email: fmspwales@swansea.ac.uk

AM
DDIM

Rhoddir y gyfres anfeidraidd S gan $S = 1 + (1+d)r + (1+2d)r^2 + \dots + (1+nd)r^n + \dots$
ar gyfer $|r| < 1$. Drwy ystyried $S - rS$ neu fel arall profwch fod $S = \frac{1}{1-r} + \frac{rd}{(1-r)^2}$

Ffynhonnell: <https://maths.org/step/>



Rheolir gan Brifysgol Abertawe, Sefydliad Gwyddorau Cyfrifiadurol a Mathemategol Cymru
Managed by Swansea University, Wales Institute of Mathematical and Computational Sciences



fmspwales@swansea.ac.uk



youtube.com/c/RhGMBCFMSPW



@RhGMBC_FMSPW

Fideos
UG & A2 yma



mathsbellach.cymru