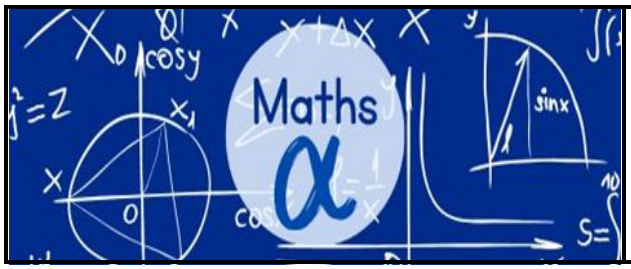


Year 10
Weekly Tutorial 15

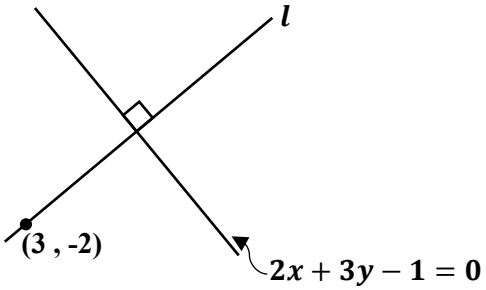
mathsalpha.com

1. Simplify.

a) $(2x)^2 \times 3x^{-1}$

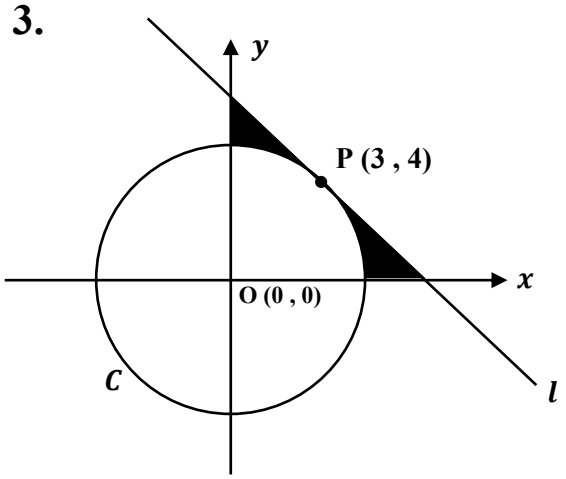
b) $\left(\frac{27x^4}{125y^6x^{-2}}\right)^{-\frac{2}{3}}$

2.



Find the equation of line l.

3.

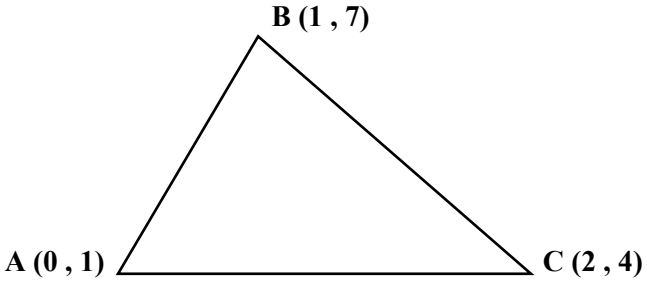


A circle C has a centre O (0 , 0)
Line l is a tangent to C at P (3 , 4).

a) Find the equation of the circle, C.

b) Find the shaded area.

4.



a) Find the angle BAC correct to 1dp.

b) Find the area of the triangle ABC correct to 1dp.

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5. Solve by completing the square.
Give the answer in exact form.
$3x^2 - 6x - 1 = 0$

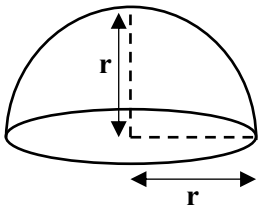
6. An investment bank offers two investment plans.

Plan A
2.5% simple interest per annum up to £ 5 000.
3% simple interest per annum on any amount over £ 5 000.

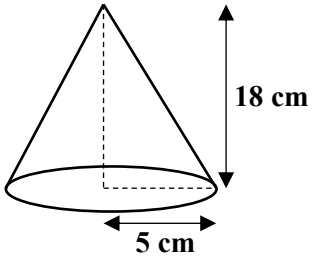
Plan B
2.8% compound interest per annum.

If you want to invest £ 12 000 for 4 years which plan is better to invest?
(You must show all the working)

7.



Solid hemisphere



Solid cone

The above hemisphere and the cone have same volume. Find the radius of the hemisphere correct to 1dp.

8. Find the n^{th} term of the sequence.
1 4 11 22 ...

9. Sketch graphs of the following trig functions.

a) $y = \sin x \ \ , -180^o \leq x \leq 360^o$

b) $y = \cos x \ \ , -360^o \leq x \leq 90^o$

c) $y = \tan x \ \ , \ 0^o \leq x \leq 450^o$

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10.

a) Given that $f(x) = \sin x$, sketch the graphs with equations;

i) $y = 2f(x)\ ,\ 0^0 \leq x \leq 360^o$

ii) $y = f(x + 30^o)\ ,\ -180^o \leq x \leq 180^o$

iii) $y = f(2x)\ ,\ 0^o \leq x \leq 180^o$

iv) $y = f(x) + 1\ ,\ 0^o \leq x \leq 360^o$

b) Given that $f(x) = \tan x$, sketch the graph with equations;

i) $y = f\ (x - 60^o) \leq x \leq 360^o$

ii) $y = f(x + 45^o)\ , 0^o \leq x \leq 450^o$

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