GCSE - Year 10
Weekly Tutorial - 12

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1. Expand and simplify. $\left(x+\frac{1}{x}\right)\left(x-\frac{2}{x}\right)$

2. Solve; $x^{\frac{2}{3}} = \frac{25}{64}$

3. Solve by completing the squares; $11 + 2x - 3x^2 = 0$

4. Find the coordinates of the turning points of graphs of following functions.

a) $y = x^2 + 8x - 5$

b) $y = 2x^2 - 12x + 3$

c) $y = -3x^2 + 10x - 5$

5. Sketch the graphs of following quadratic functions. Show the coordinates of the turning points, roots and y-intercepts.

a) $y = x^2 + x - 6$

b) $y = -2x^2 + 3x + 2$

6. $f(x) = \frac{x}{x+1}$ and $g(x) = \frac{2}{x-1}$

a) Find $fg(-3)$

b) Find $fg(x)$

c) Find $f^{-1}(5)$

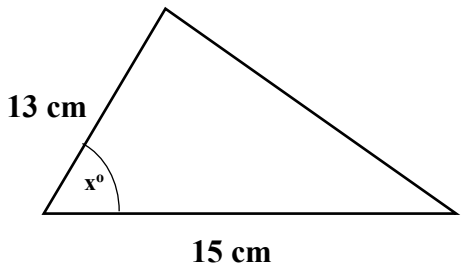
7. Solve algebraically the simultaneous equations.

$x^2 + y^2 = 25$

$y - 3x = 13$

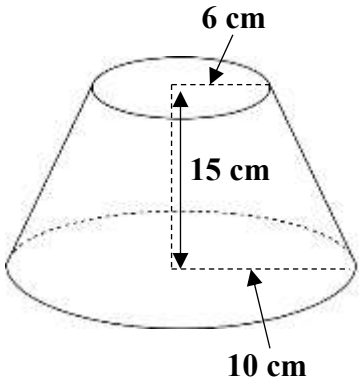
(Edexcel 2017 – 1 H)

8.

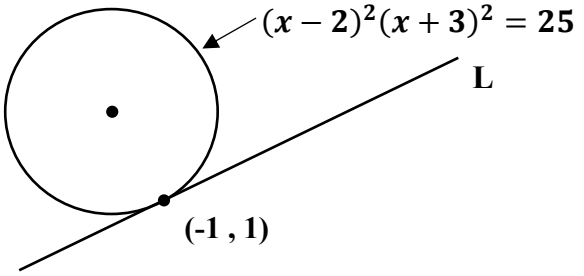


Area of the triangle is 62.7 cm^2. Find the angle x^o, correct to 1 dp.

9. Find the exact volume of the frustum.



10.



Find the equation of the tangent to the circle.
$(x-2)^2(x+3)^2 = 25$ at $(-1,1)$

11.

a) Sketch the graph of $y = x^2$.

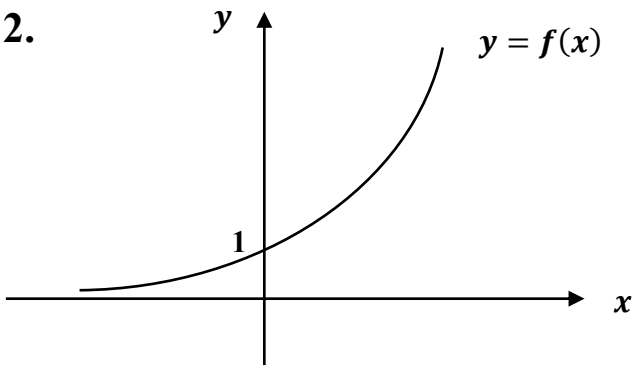
b) Hence sketch following graphs.

I. $y = (x+3)^2 - 2$

II. $y = 2(x-5)^2$

(You have to clearly show the roots and y-intercept)

12.



a) Draw the graphs of $y = -f(x)$ and $y = f(-x)$

b) Draw the graph of $y = f(x) - 3$

(You have to show any asymptotes and coordinates where the graph cut the y-axis)