

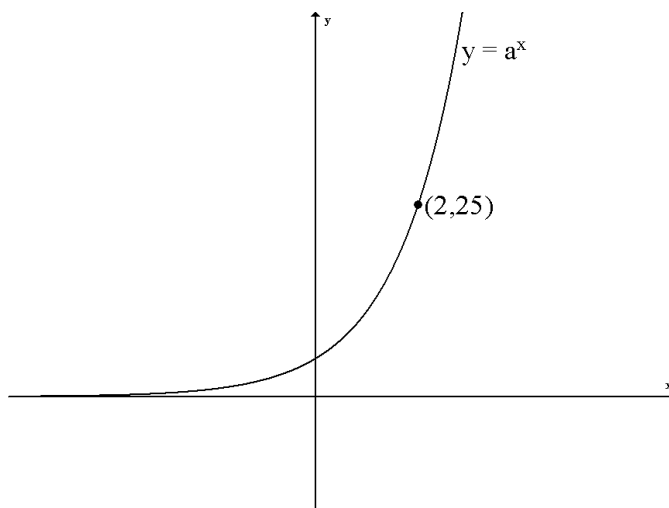
Credit Mathematics – Homework M

Non-calculator section:

- Express as a single fraction $\frac{2}{3}$ of $(2\frac{1}{2} - \frac{3}{5})$
- Express (a) $P = \frac{50y^2}{u}$ in terms of y . (b) $\frac{3}{u} - \frac{1}{u^3}$, $u \neq 0$ as a single fraction.

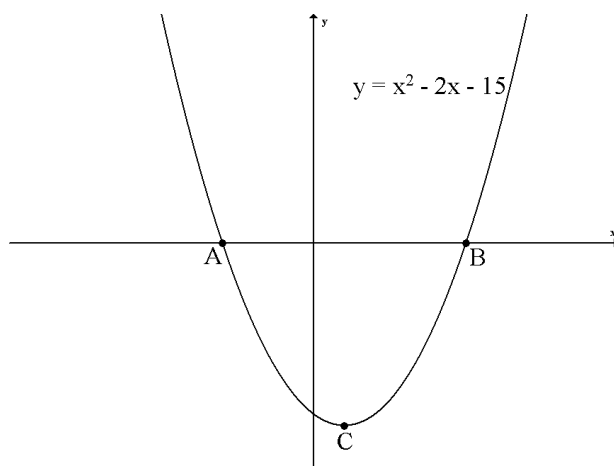
- The diagram opposite shows part of the graph of $y = a^x$.

The point (2,25) lies on this graph.
Find the value of a .



- A parabola has equation $y = x^2 - 2x - 15$.

- Find the coordinates of A and B.
- Find the coordinates of C, the minimum turning point of the parabola.

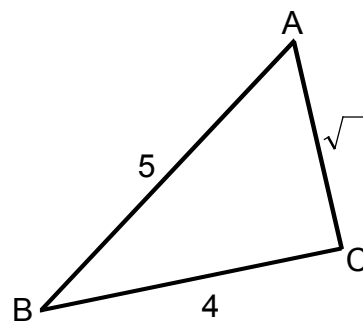


- Simplify $n^{\frac{1}{2}} \times \sqrt{n^5}$

- Triangle ABC has $AB = 5$, $BC = 4$ and $AC = \sqrt{6}$.

- Show that $\cos BAC = \frac{3}{2\sqrt{6}}$

- Express this value with a rational denominator.



Calculator section:

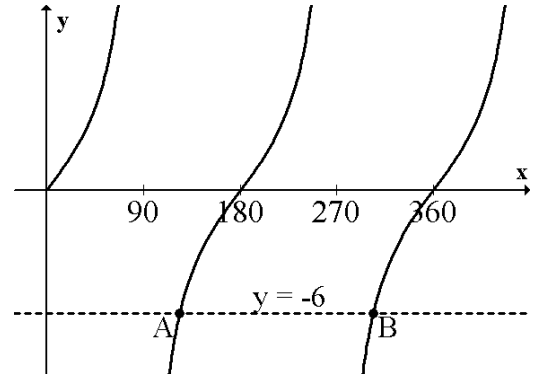
- $P = \frac{x(x-1)}{2}$. Find x when $P = 21$.

8. A photograph of the Eiffel Tower in Paris is shown opposite. The photograph is to be enlarged and after enlargement the area of the photograph will be 168 cm^2 . This enlargement has an area 40% bigger than the original photograph. Calculate the area of the original photograph.



9. The diagram shows part of the graph of $y = 4 \tan x$. The line $y = -6$ is also drawn on the graph.

Find the coordinates of A and B.



10. (a) Two one pound coins and three 20 pence pieces weigh a total 34 grams. Write down an equation to represent this.



- (b) Four one pound coins and one 20 pence piece weigh a total of 43 grams. Write down an equation to represent this.



- (c) Find the total weight of seven one pound coins.

11. The number of litres of petrol, L , used by a car on a journey varies as the distance, D km, travelled and as the square root of the average speed, S kmph. Two cars used the same amount of petrol for different journeys.

Car M travelled 162 km at an average speed of 64 kmph.
Car N travelled 144 km.

Calculate the average speed of car N.

12. A rectangular wall vent is 20 cm long and 14cm wide. It is to be enlarged by increasing both the length and width by x cm.

- (a) Show that the area, $A \text{ cm}^2$, of the new vent is $A = x^2 + 34x + 280$.

- (b) The area of the new vent must be at least 60% more than the original area. Find the minimum dimensions, **to 1 decimal place**, of the new vent.

