Exercise 1 Calc. : ✗

In a certain country the growth of a certain rabbit population (per week) can be modelled with the following function: $$f(x) = 100 \cdot 2^x$$ with $f(x)$ describing the number of rabbits after x weeks and $x = 0$ being the time at the beginning of the observation of the rabbit population.	
1. **Give** the number of rabbits, that have been in the country at the beginning of the observation.	1 mark
2. **Calculate** how many rabbits will live in the country after 1 week and after 3 weeks and **compare** the values.	4 marks
3. **Sketch** the graph of the function f for $x \in [0, 5]$. **Use** the sheet of graph paper you received at the beginning of the exam.	2 marks

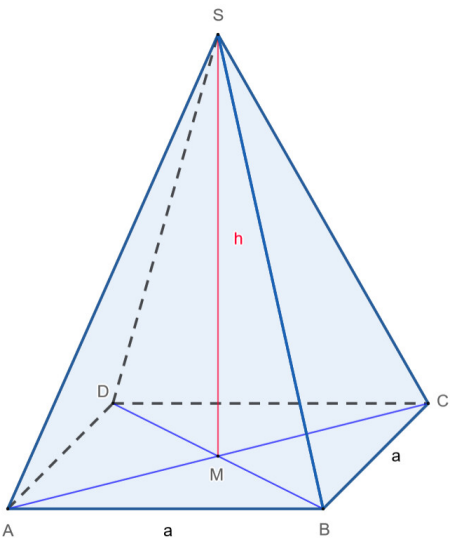
Exercise 2 Calc. : ✗

Determine the real number(s) for which the following equations are true:	
a) $3^{x+2} = 1$	2 marks
b) $5^{x-1} = \sqrt{5}$	2 marks
c) $\left(\frac{1}{4}\right)^x = 64$	3 marks

Exercise 3 Calc. : ✗

The figure shows a pyramid ABCDS with a square base.
The base is a = AB = 6 cm and the height of the pyramid is $h = 4$ cm.

Please note: the figure is not to scale.



1. Given that the formula for the volume of a pyramid is

$$V = \frac{\text{Base area} \cdot \text{height}}{3}$$

Calculate the volume of this pyramid. — 2 marks

2. **Calculate** the height of triangle BCS from S. — 2 marks
3. **Calculate** the area of triangle BCS. — 2 marks
4. **Calculate** the surface area of this pyramid. — 3 marks

Exercise 4 Calc. : ✗

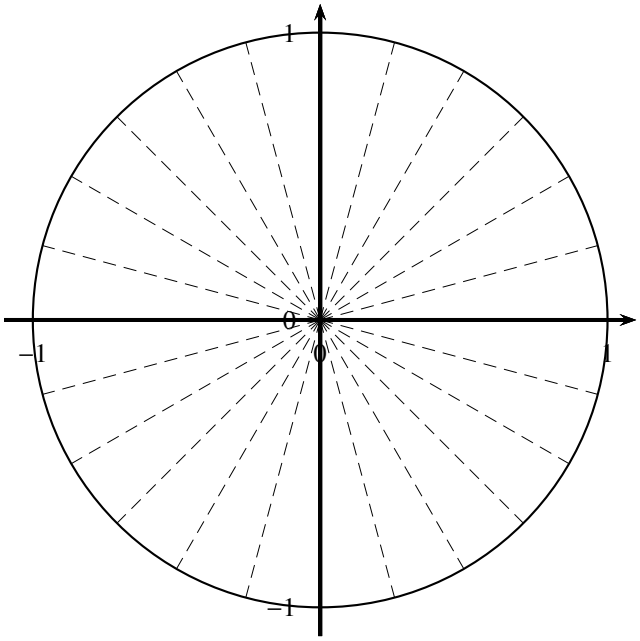
1. **Determine** what each angle in degrees is equivalent to in radians: 3 marks

   i. 45ř ii. 150ř iii. 300ř

2. **Determine** what each angle in radians is equivalent to in degrees: 2 marks

   i. $\frac{1}{3} \cdot \pi$ rad ii. $\frac{5}{4} \cdot \pi$ rad

4. **Insert** those 5 angles listed above on the unit circle 2 marks



4. Given is $\cos(60ř) = \frac{1}{2}$.

   Based on this information, **find** the value α $(0 < \alpha < 360ř)$ for which $\cos(\alpha) = -\frac{1}{2}$. 5 marks

   Enter the answer in radians and **plot** it on the above unit circle.