Name:
Group 2
Result:

Diagrams are not to scale.

1. (1 point) Select all Pythagorean triples (n is assumed to be a natural number greater than 1):

   A. $\{3, 4, 5\}$ B. $\{7, 15, 17\}$ C. $\{2n, 3n, 4n\}$ D. $\{2n, n^2 - 1, n^2 + 1\}$

2. (1 point) $\log_{0.25} \sqrt[3]{2} =$

   A. $-\frac{1}{3}$ B. $-\frac{1}{6}$ C. $\frac{1}{3}$ D. $\frac{1}{6}$

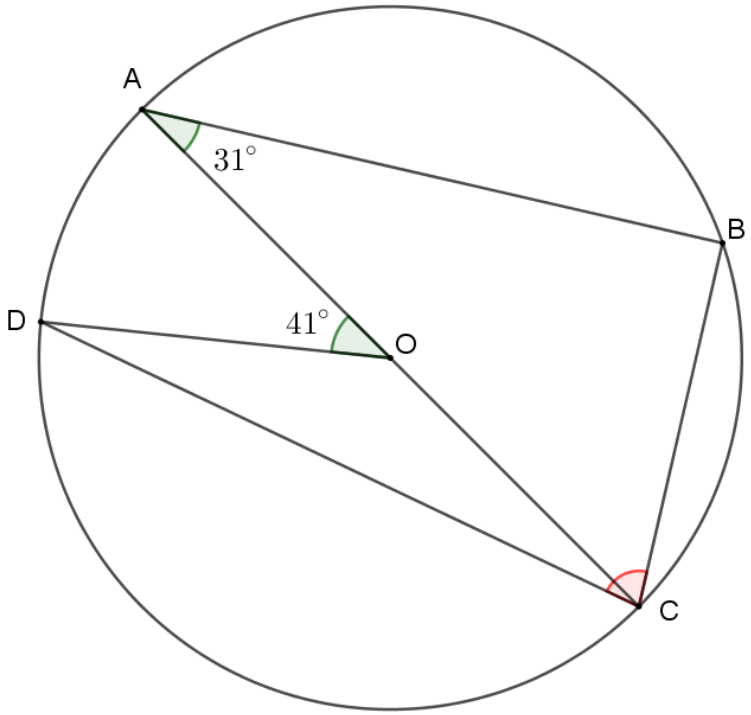
3. (1 point) How many real solutions does the equation

   $$31x^2 + x - 2020 = 0$$

   have?

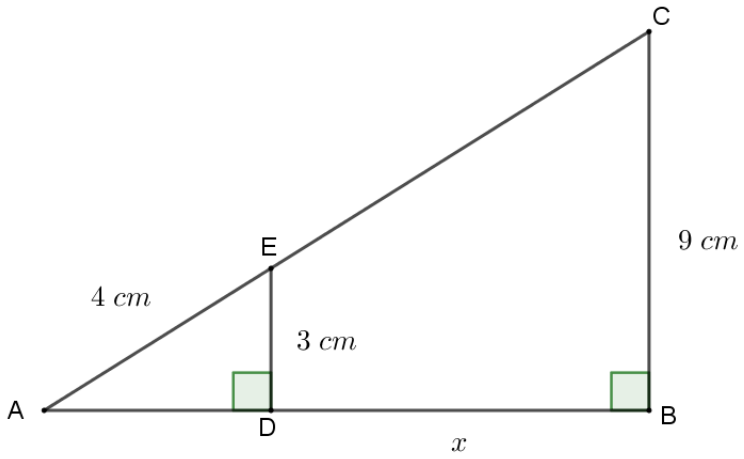
   A. 0 B. 1 C. 2 D. infinitely many

4. (2 points) Consider the following diagram:



O is the centre of the circle. Find the size of the angle BCD.

5. (4 points) Consider the following figure:



Find the length of the line segment DB.

6. (5 points) Solve the following equations:

(i) $2x^2 + 9x = 0$

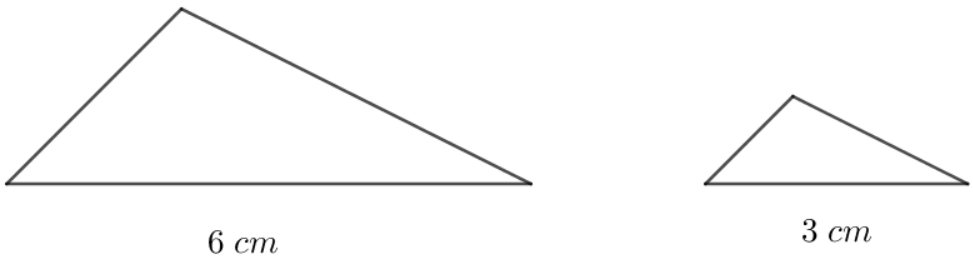
(ii) $x^2 - 3x = 18$

(iii) $3x^2 + 7x = 6$

(iv) $2x^2 - 4x + 1 =$

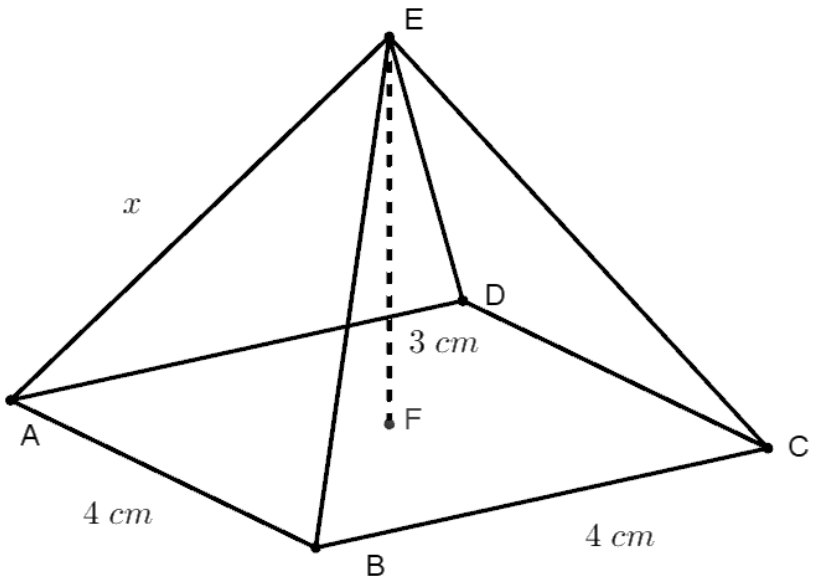
(v) $2^{2x+2} + 3 \cdot 2^x - 1 = 0$

7. (2 points) Consider the following similar triangles:



If the total area of both triangles is 40 cm^2, find the area of the larger triangle.

8. (4 points) Consider the following pyramid $ABCDE$:



The base of the pyramid is a square of side length 4 cm. The height of the pyramid is 3 cm.

(a) Find the slant height x of the pyramid.

(b) Find the total surface area of the pyramid.