

Name:

Group 1

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. $\{2, 3, 4\}$ B. $\{8, 15, 17\}$ C. $\{3n, 4n, 5n\}$ D. $\{2n, n^2 - 1, n^2 + 1\}$

2. (1 point) $\log_{0.5} 2\sqrt[3]{2} =$

A. $-\frac{4}{3}$ B. $-\frac{3}{4}$ C. $\frac{4}{3}$ D. $\frac{3}{4}$

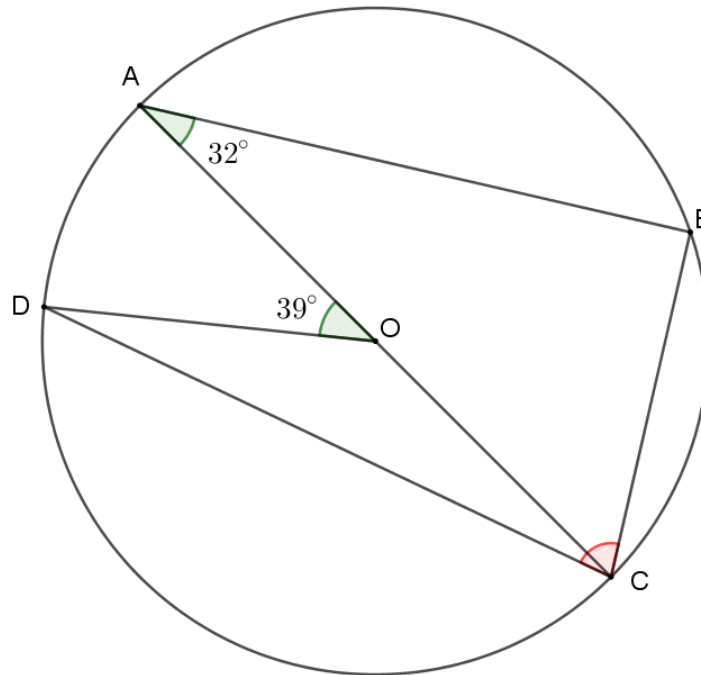
3. (1 point) How many real solutions does the equation

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

have?

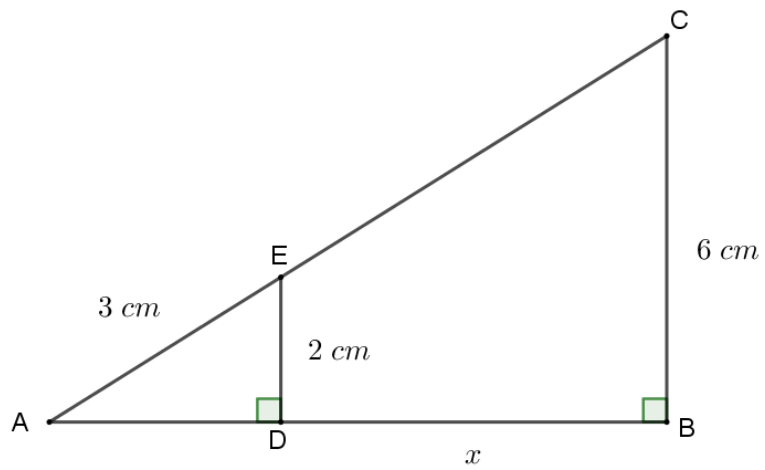
A. 0 B. 1 C. 2 D. infinitely many

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) $3x^2 + 7x = 0$

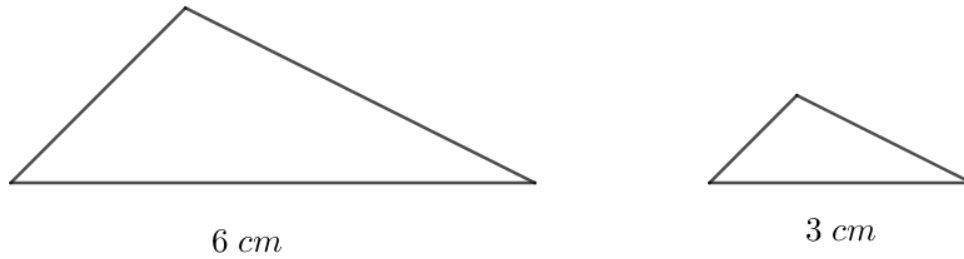
(ii) $x^2 - 4x = 21$

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

(iv) $2x^2 - 4x + 7 =$

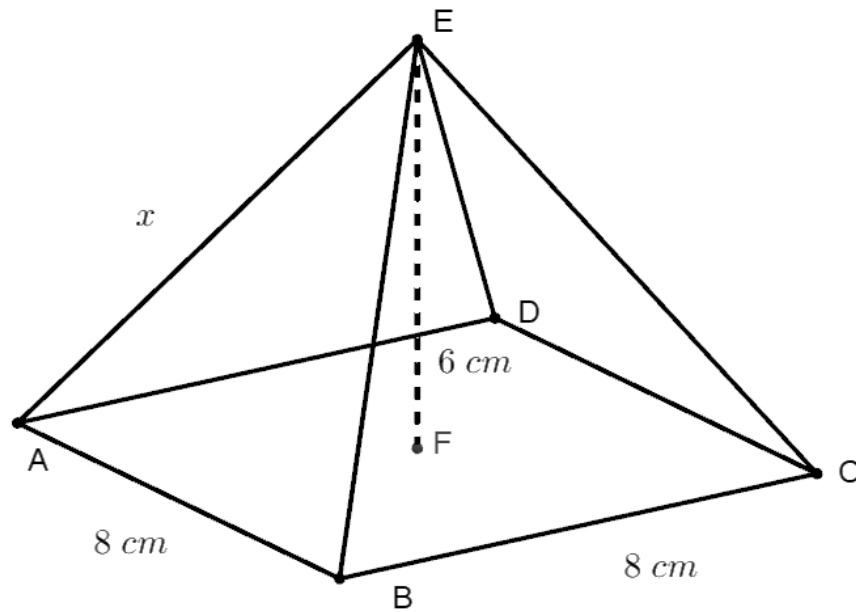
(v) $2^{2x+1} + 5 \cdot 2^x - 3 = 0$

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



If the total area of both triangles is 30 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 8 cm . The height of the pyramid is 6 cm .

- Find the slant height x of the pyramid.
- Find the total surface area of the pyramid.