

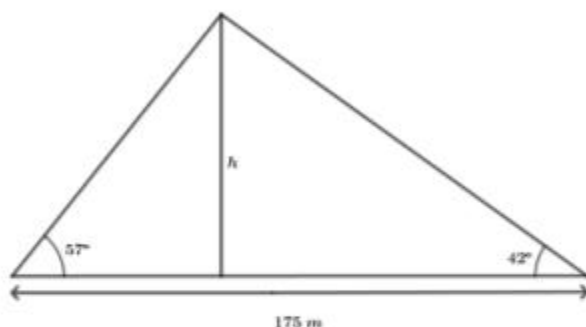


TRIGONOMETRY AND ANALYTIC GEOMETRY



TEST - 4º ESO

Exercise 1: (1.5 ptos) Find the value of h knowing that the base of the triangle measures 175 m and the angles are 57° and 42°



$$h = 99.43 \text{ m}$$

Exercise 2: (1.25 ptos) If $\sin \alpha = 0.72$ and $\frac{\pi}{2} < \alpha < \pi$ find the values of $\cos \alpha$, $\tan \alpha$, and the value of the angle α . Round the answers to four decimal figures.

$$\cos \alpha = -0.6940$$

$$\tan \alpha = -1.0375$$

$$\alpha = 133^\circ 56' 44''$$

Exercise 3: (1 pto) Convert:

a) $\frac{29\pi}{15}$ rad into degrees 348°

b) $\frac{10\pi}{12}$ rad into degrees 150°

c) 225° into radians $\frac{5\pi}{4}$ rad

d) 210° into radians $\frac{7\pi}{6}$ rad

Exercise 4: (1.25 ptos) Find the three principal trigonometric functions of $\alpha = \frac{4\pi}{3}$ rad without using a calculator

$$\cos \frac{4\pi}{3} = -\frac{1}{2}$$

$$\sin \frac{4\pi}{3} = -\frac{\sqrt{3}}{2}$$

$$\tan \frac{4\pi}{3} = \sqrt{3}$$

Exercise 5: (1.25 ptos) Given the points $A(k, 6)$, $B(7, 4)$ and $C(6, k-1)$ find the value of k so that the triangle that they form has a right angle in B $k = 3$

Exercise 6: (1.25 ptos) Prove that the triangle formed by the points $A(4, 7)$, $B(2, 3)$ and $C(6, 1)$ is isosceles. Is it a right-angled triangle? Justify all of your answers.

$$|AB| = |BC| = \sqrt{20} \rightarrow \text{isosceles}$$

$$\overrightarrow{AB} \cdot \overrightarrow{BC} = 0 \rightarrow \overrightarrow{AB} \perp \overrightarrow{BC} \rightarrow \text{right-angled in B}$$



Exercise 7: (1.25 pts) Given the vectors $\vec{u} = (3, -5)$, $\vec{v} = (7, 8)$ and $\vec{w} = (-1, 3)$ write \vec{v} as a linear combination of \vec{u} and \vec{w}

$$\vec{v} = \frac{29}{4}\vec{u} + \frac{59}{4}\vec{w} \quad (\text{Ew})$$

Exercise 8: (1.25 pts) Find the symmetric of the point $A(5, -3)$ with respect to the point $B(-6, 7)$

$$A'(-17, 17)$$

