TRIGONOMETRY AND ANALYTIC GEOMETRY

4º ESO

Exercise 1: (1.75 ptos)

a) **(1.25)** Find the three principal trigonometric functions of $\alpha = \frac{11\pi}{6}\text{rad}$ without using a calculator

b) **(0.5)** Transform $\frac{8\pi}{15}\text{rad}$ into degrees, and $165°$ into radians

Exercise 2: (1 pto) Given the vectors $\vec{u} = (-1,4)$, $\vec{v} = (4,-7)$ and $\vec{w} = (-2,5)$ write $\vec{v}$ as a linear combination of $\vec{u}$ and $\vec{w}$

Exercise 3: (1 pto) If $\tan\alpha = -0.75$, $\frac{\pi}{2} < \alpha < \pi$ find the values of $\cos\alpha$, $\sin\alpha$ and the angle α

Exercise 4: (2.25 ptos)

a) **(1.25)** Determine if the triangle given by $A(8,4)$, $B(6,7)$ and $C(9,9)$ has a right angle and work out its perimeter.

b) **(1)** Find the general equation of the line that goes through the points $P(-2,7)$ and $B(4,1)$

Exercise 5: (2.5 ptos) Given the straight line $r \equiv \frac{x-5}{2} = y+3$ work out:

a) **(1)** The general equation of a parallel line going through $P(2,-4)$

b) **(1)** The general equation of a perpendicular line going through $Q(3,7)$

c) **(0.5)** The parametric equations of r

Exercise 6: (1.5 ptos) Given the points $A(k,3)$, $B(6,5)$ and $C(k+3,k+1)$ find the value of k so that the triangle that they form is isosceles in B