



THIRD TERM GLOBAL TEST

4º ESO



Exercise 1: (2 points) Given the points $A(3,4)$, $B(-6,k-3)$ and $C(k+2,k-9)$

- a) Find the values of k so that the triangle that they form has a right angle in A

$$k = 4, \quad k = 25$$

- b) If $k = 4$ or $k = 25$ decide if any of the previous triangles is an isosceles one

The triangle is isosceles when $k = 4$

Exercise 2: (1 pto) Given the vectors $\vec{u} = (5,9)$, $\vec{v} = (1,-3)$ and $\vec{w} = (-1,4)$ write \vec{u} as a linear combination of \vec{v} and $\vec{w} \rightarrow \vec{u} = 29\vec{v} + 24\vec{w}$

Exercise 3: (1.75 points) Given the straight line $r \equiv 7x - 2y + 9 = 0$

- a) Find the continuous equation of r $\frac{x+1}{2} = \frac{y-1}{7}$ (0.75)

- b) Find the general equation of a parallel line going through the point $P(4,-7)$ (0.5)
 $7x - 2y - 42 = 0$

- c) Find the general equation of a perpendicular line going through the point $Q(9,2)$ (0.5)
 $2x + 7y - 32 = 0$

Exercise 4: (2 points) Given two events A and B so that $P(\bar{A}) = 0.4$, $P(B) = 0.7$ and $P(B/A) = 0.75$, work out:

- a) (0.75) $P(A \cup B) = 0.85$

- b) (0.75) $P(A/B) = 0.6429$

- c) (0.5) Are A and B independent events? Justify your answer. No, they are not

$$P(A \cap B) = 0.45 \neq 0.42 = P(A) \cdot P(B)$$

Exercise 5: (2 points) 350 dogs and 150 cats stayed at an animal shelter last year. 80% of the dogs and 65% of the cats were lucky and found a new home. Taking a random animal find the probability that:

- a) It was adopted $P(A) = 0.755$

- b) It is a dog, given that it is still at the shelter $P(D/\bar{A}) = 0.5714$

Exercise 6: (1.25 points) If $\tan \alpha = 1.17$ and $\pi < \alpha < \frac{3\pi}{2}$ find the values of $\cos \alpha$, $\sin \alpha$ and the angle α expressed using degrees, minutes and seconds

$$\cos \alpha = -0.6497$$

$$\sin \alpha = -0.7602$$

$$\alpha = 229^\circ 28' 46''$$

