Module CLIL - Equations - Final Exam CLASS 1° B [A] 23/05/2009

NAME ..... SURNAME .....

EXERCISE 1. For which of the following values of a the equation $(a^2+2a-3)x = a-1$ is impossible?

A	$a = 1$
B	$a = -3$
C	$a = 1 \wedge a = -3$
D	$a = 0$
E	for no value of a

EXERCISE 2. Consider the equation $\dfrac{3x+6}{x^2-1} = \dfrac{2x+7}{x^2-1}$. Which of the following sentences are true?

A	the existence conditions are C.E.: $x \neq 1$
B	its only solution is 1
C	it is a fractional equation
D	it is an undetermined equation
E	it is an impossible equation

EXERCISE 3. Consider the two equations $3x+1 = 2x+1$ and $x(x+1) = 0$. Which of the following sentences are true?

A	they have the same degree
B	they are equivalent because they both have the solution 0
C	they are not equivalent
D	the first is in normal form
E	none of the preceding is true

EXERCISE 4. Which of the following numbers is a solution of the equation

$$\frac{4x}{x-2} = \frac{x+3}{2-x} + 1$$

A	$\dfrac{3}{2}$
B	0
C	2
D	$-\dfrac{5}{4}$
E	-3

EXERCISE 5. Which of the following are the existence conditions of the equation

$$\frac{3x-1}{3x} - \frac{x}{x^2+4} = \frac{4}{x^2-1}$$

A	$x \neq 0 \wedge x \neq -2$
B	$x \neq 0 \wedge x \neq -2 \wedge x \neq 1$
C	$x \neq 0 \wedge x \neq 1 \wedge x \neq -1$
D	$x \neq -2 \wedge x \neq -3$
E	none of the preceding

EXERCISE 6. Consider the equation

$$\frac{1}{a}x = 4b$$

Which of the following sentences are true?

A	it is always determined
B	if $a, b \in \mathbb{Z}$ the solution is an even number
C	if $a, b \in \mathbb{N}$ and $a = b$ the solution is a perfect square
D	if $a = 0$ it is undetermined
E	there is only one value of a for which the equation has the solution 0

EXERCISE 7. Consider the equation

$$k^2x^2 - 8kx + 15 = 0$$

For what values of k the equation has 1 as a solution?

A	$k = 0$
B	$k = 3 \wedge k = 1$
C	$k = 5 \wedge k = 0$
D	$k = 3 \wedge k = 5$
E	for infinite values of k

EXERCISE 8. Consider the equation

$$2ax + b = 8a + b - 6a$$

. Which of the following equations are equivalent to it?

A	$2ax + b + 5 = 8a + b - 6a + 4$
B	$2ax + b - b = 8a + b - 6a - b$
C	$2ax + b + \frac{1}{2} = 8a + b - 6a - \frac{1}{2}$
D	$2ax + b - 2a = 8a + b - 6a - 2b$
E	none of the preceding

EXERCISE 9. Consider the equation

$$\frac{2}{3} + \frac{1}{3}x = \frac{1}{3}$$

. Which of the following sentences are false?

A	it is a numeric fractional equation
B	it is not an identity
C	it has solution in $\mathbb{N}$
D	it has solution in $\mathbb{Z}$
E	it has solution in $\mathbb{Q}$

EXERCISE 10. Suppose a, b are two non zero natural numbers. In which of the following cases the equation

$$a^2x + b^2x + abx = a^3 - b^3$$

has the solution in the set of integers $\mathbb{Z}$?

A	always
B	never
C	only if $a > b$
D	only if $a \neq b$
E	only if both a and b are even numbers

EXERCISE 11. Solve the following fractional equation

$$\frac{2x-1}{x+2}+\frac{1-x}{1+x}=\frac{x-3}{x+2}$$

EXERCISE 12. Discuss and solve the literal equation

$$x(x+a) = x(x-a) + a - 1$$

EXERCISE 13. A purse contains 32 coins, all 50 eurocents and 1 euros. The total value of the money is 25.50 euros. How many coins are there of each kind?