

BACHELOR IN MANAGEMENT AND ENGINEERING SCIENCES



Test preview – Mathematics – 5 questions – 15 minutes

For each question there is only one correct answer.

Scale:

+3 points for a correct answer, -1 point for a wrong answer, 0 point if no answer

(1) Question n°1:

If $f(x) = \frac{x^2+1}{3x^2-x}$ then $f'(x)$ is

- A. $\frac{12x^3-3x^2+6x-1}{(3x^2-x)^2}$
- B. $\frac{12x^3+3x^2+6x-1}{(3x^2-x)^2}$
- C. $\frac{-3x^2+6x-1}{(3x^2-x)^2}$
- D. $\frac{-x^2-6x+1}{(3x^2-x)^2}$

(2) Question n°2:

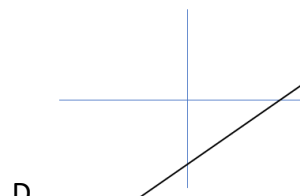
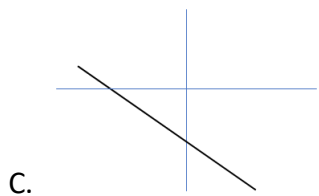
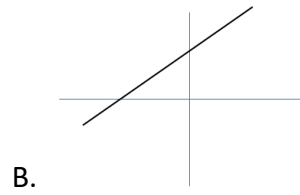
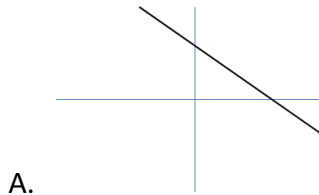
If $g(x) = (\sin(x))^2$, then $g''(\pi)$ is equal to ?

- A. 1
- B. 0
- C. 2
- D. -1

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(3) Question n°3:

A linear function is given by $ax + by + c = 0$ with $a < 0$, $b < 0$ and $c > 0$. Which of the following graphs best represents the graph of the function?



(4) Question n°4:

If four students are randomly chosen from a group of 5 girls and 5 boys, what is the probability of choosing 2 girls and 2 boys?

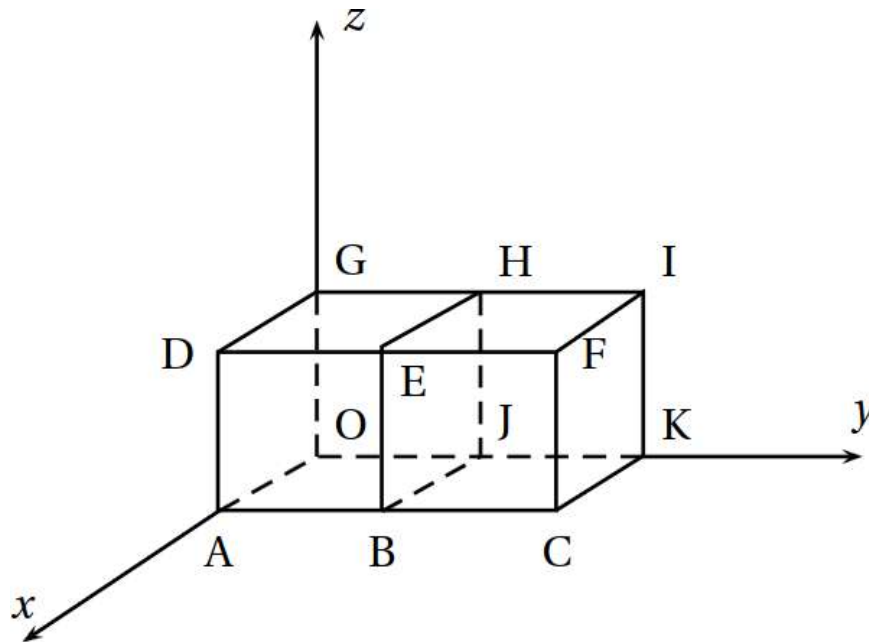
- A. $\frac{10}{21}$
- B. $\frac{2}{5}$
- C. $\frac{1}{2}$
- D. $\frac{3}{8}$

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(5) Question n°5:

On the figure below, $ABJOGDEH$ and $BCKJHEFI$ are two identical cubes.

Which proposition best describes the triangle GBI ?



- A. GBI is an equilateral triangle
- B. GBI is a right triangle
- C. GBI is a right isosceles triangle
- D. GBI is an isosceles triangle