



**DEMO\_TIEC\_Math**

1. The polynomial  $p(a) = 4a^3 - 2a^2 - 2a$  is divisible by

- (a+1)
- (a - 1)
- (a+2)
- (a - 2)

2. Let  $x = (9999)^2 - (10001)^2$ . Then

- $x = -40000$
- $x = 20000$
- $x = -4000$
- $x = -20000$

3. The inequality  $(2x + 7)(x - 4)^2 \leq 0$  is satisfied for

- $x \leq -7/2 \vee x=4$
- $x \leq -7/2$
- $-7/2 \leq x \leq 4$
- $x \leq -7/2 \vee x \geq 4$

4. The equation with roots  $x = 1$  and  $x = -2$  is

- $(x - 1) / (x+2) = 0$
- $x^2 - x + 2 = 0$
- $x^2 + x - 2 = 0$
- $(x - 2)(x+1) = 0$

5. The equality  $2^{(1+3a)} - (1/8)^{a+2} = 0$  holds for

- $a = -7/6$
- No value of  $a$
- $a = 6/7$
- $a = -1$

6. For which  $k$  the line  $3ky - 2x + 4k = 0$  has slope equal to 1 ?

- $k=0$
- $k = 3/2$
- $k = 2/3$
- $k = -2/3$



7. Which of the following points belongs to the parabola  $y = 2x^2 + 3x - 4$  ?
- (-1; -5)
  - (-1; 1)
  - (0; 4)
  - (-4; 0)
8. The circle  $(x+2)^2 + (y-1)^2 = 4$
- is tangent to the y-axis
  - is centered at (2; -1)
  - has radius 4
  - does not intersect the x-axis
9. If  $1 < x < 4$  then
- $(2x - 1) > 7$
  - $(1 - 2x) > -1$
  - $(2x - 1) < -1$
  - $(1 - 2x) < -1$
10. Let  $A \cup \{a,b,c\} = \{a,b,c,d\}$  and  $A \cap \{a,b,c\} = \{c\}$ . Which of the following statements is false ?
- c belongs to A
  - b does not belong to A
  - $A = \{c,d\}$
  - $A = \{b,d\}$
11. The equation  $\log_x(8) = -2$  is satisfied for
- $x = \sqrt{8}$
  - $x = \pm 1/\sqrt{8}$
  - $x = 1/2$
  - $x = 1/\sqrt{8}$
12. Put in ascending order the real numbers  $3 ; \sqrt{8} ; \sqrt{5} + 1$
- $3 < \sqrt{8} < \sqrt{5} + 1$
  - $\sqrt{5} + 1 < \sqrt{8} < 3$
  - $\sqrt{8} < \sqrt{5} + 1 < 3$
  - $\sqrt{8} < 3 < \sqrt{5} + 1$