

## Practice Set – Fundamental Theorem of Algebra

- ① What is the completely factored form of this expression?

$$2x^3 - 9x^2 + 7x + 6$$

- A.  $(x + 2)(2x + 1)(x - 3)$
- B.  $(x + 2)(2x - 1)(x - 3)$
- C.  $(x - 2)(2x + 1)(x - 3)$
- D.  $(x - 2)(2x - 1)(x + 3)$

- ④ How many real zeros does  $h(t)$  have?

$$h(t) = 4t^3 - 2t^2 + t - 10$$

- A. 3
- B. 2
- C. 1
- D. 0

- ② Given that  $f(-3) = 0$ ,  $f(-1) = 0$ , completely factor  $f(x) = x^4 + 5x^3 + 3x^2 - 13x - 12$ .

- A.  $(x - 3)(x - 1)(x + 2)(x - 2)$
- B.  $(x + 3)(x + 1)(x + 2)(x - 2)$
- C.  $(x - 3)(x - 1)(x^2 + x - 4)$
- D.  $(x + 3)(x + 1)(x^2 + x - 4)$

- ⑤ How many rational zeros does this polynomial function have?

$$f(x) = (x^4 - 16)(3x^2 - 21)(4x^2 + 1)$$

- A. 8
- B. 6
- C. 4
- D. 2

- ③ What is the number of real roots of this equation?

$$(x^4 + 1)(x - \sqrt{3}) = 0$$

- A. 1
- B. 2
- C. 4
- D. 5

- ⑥ What is the nature of the zeros of the polynomial  $f(x) = 2x^3 - x^2 - 18x + 9$ ?

- A. 3 real rational
- B. 3 real; 1 rational and 2 irrational
- C. 1 real rational, 2 nonreal complex
- D. 1 real irrational, 2 nonreal complex