

## TB(1B) Ch. 12 Manipulation of Simple Polynomials Conventional Questions

1. [13-14 Final Exam 6]

Expand  $(2 + 3x)(4 - 2x + 3x^2)$  and express the answer in descending powers of  $x$ . (3 marks)

2. [13-14 Mid-year Exam]

Simplify  $\frac{7^{5a+3}}{7^{2a-2}} \times (-7)$ . (2 marks)

3. [14-15 Mid-year Exam #5]

(a) Expand  $(3x - 2)(4x + 5)$ . (2 marks)

(b) Using the result of (a), or otherwise, expand  $(3x - 2)(2x - 1)(4x + 5)$  and arrange the answer in ascending powers of  $x$ . (3 marks)

4. [14-15 Mid-year Exam #7]

(a) Find the value of the polynomial  $2x^2 - 4x$  when  $x = 5$ . (2 marks)

(b) Find the value of  $A$  in the formula  $A = \frac{3(h^2 + 4k^3)}{10k}$  when  $h = -4$  and  $k = -\frac{3}{2}$ . (3 marks)

5. [14-15 Final Exam #2]

Expand and simplify  $(-1 - 2x - 3x^2) + (x - 2)(1 - x)$ , and arrange the terms in ascending powers of  $x$ .

(2 marks)

6. [15-16 Mid-year Exam #5]

(a) Simplify  $-2a + 8a^3 \div 4a^2$ . (2 marks)

(b) Simplify  $a^3 + 3ab^2 - b^3 - (3b^2a + b^3 - a)$ . (2 marks)

(c) Expand and simplify  $(a + 1)(a - 2)$ , arrange the terms in ascending powers of  $a$ . (2 marks)

7. [15-16 Mid-year Exam #11]

(a) Expand and simplify  $(10a + 5)^2$  and  $100a(a + 1) + 25$ . Are their results the same? (2 mark)

(b) It is given that an integer ending with 5 can be expressed in the form of  $(10a + 5)$  where  $a$  is an integer. For example,  $15 = 10 \times 1 + 5$ ,  $25 = 10 \times 2 + 5$ , etc. Use the result of (a) and by substituting a suitable value of  $a$ , find  $995^2$ . (3 marks)

**8. [15-16 Final Exam #1]**

(a) Simplify  $\frac{3x^7 \times 4x^5}{12x^{10}}$ . **(1 mark)**

(b) Simplify  $5x^2 - 3x + 4 - 2(7x^2 + 2x - 1)$  and arrange the expression in descending powers of  $x$ . **(2 marks)**

**9. [16-17 Mid-year Exam, #7]**

(a) Simplify  $\frac{-2a^4b^5}{8a^2b^5}$ . **(1 mark)**

(b) Expand  $(2x + 5)(7 + x)$  and arrange the terms in ascending powers of  $x$ . **(2 marks)**

(c) Simplify  $(5xy - 3y^2 + x^2 + 1) - (2y^2 - 5x^2 + xy)$ . **(2 marks)**

**10. [16-17 Mid-year Exam, #13]**

(a) Expand  $(1 + 2y)(m - ny + 4y^2)$  and arrange the terms in ascending powers of  $y$ . **(2 marks)**

(b) It is given that the coefficients of  $y$  and  $y^2$  in the expansion of the expression in (a) are 0. Find the values of  $m$  and  $n$ . **(2 marks)**

(c) Hence, express  $1 + (2y)^3$  in the form of  $(1 + 2y)(a + by + cy^2)$ , where  $a$ ,  $b$  and  $c$  are integers. **(2 marks)**

**11. [17-18 Mid-year Exam, #3]**

Simplify the following expressions.

(a)  $a + a - a \div a + a$  **(2 marks)**

(b)  $3ab^2 + ba^2 + (2ab)^2$  **(1 mark)**

(c)  $2a^5 \div (-a^3) \times 4a^4$  **(2 marks)**

(d)  $(2x - 3)(4x + 5)$  **(2 marks)**

**12. [17-18 Mid-year Exam, #13]**

Find the coefficient of  $y^2$  in  $(2 - 3y^2 + y)^2 - 2(y^3 - 2y^2 + 4)$ . **(2 marks)**

**13. [17-18 Final Exam, #11]**

Expand and simplify  $(x - 2y)(3x + 4y) - (3x - 4y)^2$ , and arrange the terms in ascending powers of  $x$ .

**(3 marks)**

~ End ~