Section 2.6 – Chapter Summary

Problem Set 1

Identify the following expressions as polynomials, monomials or neither.

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

Simplify the following expressions.

5. $a + 2a + 3(x + 1)$
6. $x^2 + 3 + 3x^2 + y$
7. $3\,(x + 2) + x + 2$
8. $x \cdot x^2 + 3\,(x^3 + x)$
9. $z\,(z + 1)$
10. $(x + 1)\,(x + 3)$
11. $m\,(m + 1)\,(m - 1)$
12. $a + a\,(a + 2)$

Find the greatest common factor of the following monomials.

13. x^3 and $3x^3$
14. $6y^4$ and $12y^3$
15. $3y^6$, $12y^3$ and $15y^8$
16. $8ab$ and $12a^2b$
17. x^2y^3 and $3xy^{10}$
18. $14abc^3$, $7ab$ and $7ac^2$
19. ab^3 and bc^2
20. xyz^5 and ab^5

Give the degree of the following polynomials and list their terms and coefficients.

21. $4x^3$
22. $a^3 - 4a^4 + 5a^5$
23. $3xy^2 + 4x^3 + xy^5$
24. $3x^3 - 4x^2 - 4xy + 2$

Factor the following polynomials.

21. $z^2 - 2z$
22. $x^2 - 16$
23. $a^2b^3 + 4a^2b^4 - 6ab^4$
24. $x^2 - 3x - 10$
25. $x^2 + 12$
26. $3x^3 + 6x^2 + x + 2$
27. $3x^2 - 28x + 9$
28. $4x^3 - 4x^2 - 5x + 5$
29. $12x^2y + 4xy^2 + 18xy$
30. $2x^2 - 6x - 20$
31. $x^2 - 3x + 2$
32. $2x^2\,y + 3xy - 2y$