P355 Worksheet – Remainder and Factor Theorem

Use synthetic substitution to find $f(-5)$ and $f(2)$ for each function.

8. $f(x) = x^3 + 2x^2 - 3x + 1$

9. $f(x) = x^2 - 8x + 6$

10. $f(x) = 3x^4 + x^3 - 2x^2 + x + 12$

11. $f(x) = 2x^3 - 8x^2 - 2x + 5$

12. $f(x) = x^3 - 5x + 2$

13. $f(x) = x^5 + 8x^3 + 2x - 15$

14. $f(x) = x^6 - 4x^4 + 3x^2 - 10$

15. $f(x) = x^4 - 6x - 8$

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

17. $x^3 - 3x + 2; x + 2$

18. $x^4 + 2x^3 - 8x - 16; x + 2$

19. $x^3 - x^2 - 10x - 8; x + 2$

20. $x^3 - x^2 - 5x - 3; x - 3$

21. $2x^3 + 17x^2 + 23x - 42; x - 1$

22. $2x^3 + 7x^2 - 53x - 28; x - 4$

23. $x^4 + 2x^3 + 2x^2 - 2x - 3; x - 1$

24. $x^3 + 2x^2 - x - 2; x + 2$

25. $6x^3 - 25x^2 + 2x + 8; 2x + 1$

26. $4x^4 - 16x^3 + 7x^2 + 36x - 36; (x - 2)^2$