Elementary Function Analysis Review Packet

Elementary Function Analysis is primarily advanced algebra topics. Therefore it is essential that all students review the following concepts. All work is to be done on loose leaf. It will be checked on the second day of class and collected. No work will be accepted without the work attached.

Name_____Period_____

Simplify each expression and eliminate any negative exponents.

1. $(2x)^4 x^3$ _____ 2. $(-3y)^3$ _____ 3. $(3x)^2 (6x^2)^{-3}$ _____

4. $(2x^2)^{-5} x^{10}$ _____ 5. $b^4 (\frac{1}{3} b^2)(12 b^{-8})$ _____

6. $\dfrac{(2x^3)^2 (3x^4)}{(x^3)^4}$ _____ 7. $\dfrac{(c^4 d^3)}{c d^2} \cdot \left(\dfrac{d^2}{(c^3)^2}\right)^3$

8. $(3 a b^2 c)\left(\dfrac{2 a^2 b}{c^3}\right)^{-2}$ _____ 9. $\left(\dfrac{a^{-1} b s^{-2}}{a^{-5} b s^{-8}}\right)^{-1}$ _____ 10. $\left(\dfrac{x y^{-2} z^{-3}}{x^2 y^3 z}\right)^{-3}$

Rationalize the denominator

11. $\dfrac{2}{\sqrt{6}}$

12. $\dfrac{5}{3 + \sqrt{3}}$

13. $\dfrac{4i}{2 - i}$

14. $\dfrac{7 + 3i}{2 + 5i}$

15. $\dfrac{8 - 2\sqrt{5}}{1 + 3\sqrt{5}}$

Perform the indicated operations and simplify

16. $(3x + 2)^2$

17. $8 (2x + 5) – 2 (4x + 8)$

18. $x^2 (2 x^3 – 4 x^2 – 8x + 9)$

19. $(x^2 + a) (x^2 – a)$

20. $(x + 3y) (x – 2y)$

21. $(x^3 + 6 x^2 – 4x – 2) – (8x + 3x^2 – x^3 – 2)$

22. $(x + 1) (x^2 + 2x + 1)$

23. $(x – 2)^3$

Factor each completely

24. $12 x^3 + 18 x$

25. $x^2 – 2x – 8$

26. $9 x^2 – 36$

27. $2x^2 + 5x + 3$

28. $8x^2 + 10x + 3$

29. $2x^3 + x^2 - 6x – 3$

30. $– 9x^3 – 3x^2 + 3x + 1$

Simplify

31. $\dfrac{2x^3 – x^2 – 6x}{2x^2 – 7x + 6}$

32. $\dfrac{y^2 – 3y – 18}{2y^2 + 5y + 3}$

Perform the indicated operation and simplify

33. $\dfrac{4y^2 – 9}{2y^2 + 9y – 18} \div \dfrac{2y^2 + y – 3}{y^2 + 5y – 6}$

34. $2 + \dfrac{12x}{x + 3}$

35. $\dfrac{4x}{x^2 - 4} \cdot \dfrac{x + 2}{16x}$

Solve each equation by factoring and the zero product property

36. $x^2 + 5x – 24 = 0$

37. $4x^2 – 4x – 15 = 0$

38. $x^2 + 3x = 4$

39. $4x^2 – x = 0$

40. $x^2 = 3 (x – 1)$

Solve to the nearest hundredth by using the quadratic formula

41. $x^2 + 2x – 5 = 0$

42. $2x^2 + 8x + 1 = 0$

43. $3x^2 – 6x – 1 = 0$

44. $4x^2 – 12x = -9$

45. $3x^2 – 5x = 1$

Solve by completing the square

46. $x^2 + 22x + 21 = 0$

47. $x^2 – 8x = - 13$

48. $3x^2 – 12x + 6 = 0$

49. $x^2 – 5x + 1 = 0$

50. $x^2 = 5 (x + 100)$