

Algebra 2 to Math Analysis Summer Assignment 1

rev 6/13/17

Do the problems in notebook or on loose-leaf paper. Show all required work neatly on any problems requiring more than one step. Assignment will be turned in to teacher.

1. Evaluate the following expressions for $x = -2$, $y = 3$, and $z = -1$

a. $-3x^3 - 5x + 9$

b. $3y - 5z$

c. $-(-z)$

d. $2x^2 - 3z^2$

Simplify fractions and expressions with exponents

2. Simplify: $\frac{3}{4} + \left(\frac{7}{6}\right) - \frac{5}{12}$

3. Simplify: $\frac{3}{4} \cdot \left(\frac{7}{6}\right) \div \frac{7}{12}$

4. Simplify (all positive exponents):

a. $\frac{(x^{-2}yz^5)^3}{(x^{-2}y^{-3}z^{-2})^2}$

b. $(x^{-2}yz^5)^3 (x^{-2}y^{-3}z^{-2})^2$

c. $(x^{-2}yz^5) (x^{-2}y^{-3}z^{-2})$

d. $\frac{(x^{-2}yz^5)}{(x^{-2}y^{-3}z^{-2})^2}$

Scientific Notation and Simplifying Radical Expressions

5. Simplify/Write in scientific notation:

a. $\frac{1.2 \times 10^{-5}}{2.4 \times 10^{-4}}$

b. $2.4 \times 10^{-5} \times 1.2 \times 10^{-4}$

c. 790,000

d. 0.0000123

6. Write in standard decimal notation:

a. 2.4×10^{-5}

b. 7.81×10^7

7. Simplify:

a. $\sqrt{5} \sqrt{10}$

b. $\sqrt{7x} \sqrt{7x}$

c. $\sqrt{3x^3y^5} \sqrt{6x^3y^{-1}}$

d. $3\sqrt{12} - 8\sqrt{3} + 3\sqrt{3}$

e. $(3\sqrt{3} + 4\sqrt{2})(5\sqrt{3} - 2\sqrt{2})$

Rationalize the denominator

8. $\frac{4\sqrt{2}}{3\sqrt{10}}$

9. $\frac{\sqrt{5}}{5\sqrt{3}}$

10. $\frac{3}{5 - 2\sqrt{3}}$

11. $\frac{3 - 5\sqrt{2}}{2 - 7\sqrt{5}}$

Add, subtract, multiply polynomials

12. $2(3x^3 - 5x + 7) - (5x^2 - 9x + 1)$

13. $4(2x^3 + 3x - 7) - 3(5x^2 - 7x + 4)$

14. $(5x - 2)(3x^2 - x + 5)$

15. $(2x^2 + 6x - 4)(2x + 7)$

Factor polynomials

16. $3x^4 - 12y^6$

17. $3x^2 - 5x - 8$

18. $81x^8 - 16y^4$

19. $6x^2 - 14x + 8$

20. $x^2 - 2x - 35$

21. $24x^3 - 32x^2 - 32x$

Simplify, multiply, or divide (leave as factors) fractional polynomials

22. $\frac{x^2 - x - 6}{x^2 + 7x + 10}$

23. $\frac{x^2 + 9x + 20}{x^2 - 3x - 28}$

24. $\frac{x^2 - x - 6}{x^2 - 4} \div \frac{(x-3)}{(x+2)}$

25. $\frac{x^2 + 8x + 16}{x^2 - 4x + 4} \div \frac{x+4}{x-2}$

26. $\frac{x^2 - x - 12}{x^2 - 4} \cdot \frac{x-3}{x+2}$

27. $\frac{x^2 + 8x + 16}{x^2 - 4x + 4} \cdot \frac{x^2 + x - 6}{x^2 + 6x + 8}$

Adding Fractional polynomials

28. $\frac{2x}{2x-1} - \frac{5}{x+5}$

29. $\frac{2}{5x+3} - \frac{3}{2x-5}$

30. $\frac{2x+1}{x-1} - \frac{3}{x-5}$

31. $\frac{2}{x-1} - \frac{5-x}{x}$

**Finding the distance between two points in the coordinate system and
Finding the midpoint of a segment joining two points in the coordinate system.**

Find the distance between the points

32. (-3, 2) and (4, 7)

33. (5, -2) and (7, -4)

34. (-7, -5) and (7, 5)

Find the midpoint of the segment joining the points

35. (-4, 6) and (7, -4)

36. (5, -2) and (7, -4)

37. (-7, -5) and (7, 5)

Circles

38. What is the equation of a circle with center at (2, -3) and radius $2\sqrt{3}$?

39. Find the center and radius of $(x + 2)^2 + (y - 3)^2 = 25$. center _____, radius _____

Number Systems

Check all that apply

	Natural	Whole	Integer	Rational	Irrational	Real
40. $-\frac{3}{4}$						
41. 10.598123						
42. 0						
43. $-\sqrt{23}$						
44. $-\sqrt{25}$						
45. -5						

Algebra 2 to Math Analysis Summer Assignment 2

rev 6/13/17

Do the problems in notebook or on loose-leaf paper. Show all required work neatly on any problems requiring more than one step. You will be required to turn in the assignment to your teacher.

1. Evaluate $2|x-8|$ for $x = 2$.

Simplify (only positive exponents in answer):

2. $(x^3yz^3)^6(x^2y^4z^2)^3$

3. $\frac{(3x^{-4}y^3)^2}{(2x^2y^4)^3}$

4. **Simplify:** $\frac{x^2+7x+10}{2x-4} \cdot \frac{x-2}{x^2-3x-10}$

Use the points (4, 5) and (6, -7) to do problems 5 and 6.

Use the following formulas: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

5. Find the distance between the points.

6. Find the midpoint of the segment connecting the points.

Solve the equations for x. Find all solutions (real or complex). Show work completely. Check for extraneous solutions where needed.

7. $\frac{x}{5} - \frac{x}{2} = 3$ [use LCD]

8. $x^4 - 4x^2 + 3 = 0$ [use factoring]

9. $\sqrt{x-10} - 4 = 0$

10. $(x-5)^{2/3} = 16$

11. $|2x-1| = 5$

12. $x^2 + 8x - 4 = 0$ [Use Quadratic Formula]

13. $x^3 - 4x^2 + x - 4 = 0$ [use factoring]

14. $(x-4)^2 = 12$

15. $\sqrt{5-3x} - 6 = 0$

16. $x - 5 = \sqrt{x+7}$

17. $x^2 + x + 6 = 0$

18. $3^x = 8$

19. $2^{3x-5} = 16$

20. $\log_3(5x+7) = 2$

21. $\frac{x-5}{x+1} = \frac{3}{5}$

22. $\frac{x}{x-2} + \frac{x}{x^2-4} = \frac{x+3}{x+2}$

23. Solve the system: $\begin{cases} x - 5y = 6 \\ 3x + 4y = 18 \end{cases}$

24. $\log_5(x+4) + \log_5(x-4) = 2$