

To: All students enrolled in Math Analysis for the 2019-2020 school year

Welcome to Math Analysis!

The attached summer packet is for all students enrolled in Math Analysis this fall. It is expected that you have mastered the concepts necessary to complete the following problems. The concepts will not be taught in Math analysis since this as an honors class where knowledge of prior course work is expected. This packet is due the first day of school Tuesday, September 3, 2019.

Hope you have a great summer!

1.) Multiply and simplify.

$$\sqrt{5} \cdot \sqrt{125}$$

2.) Multiply and simplify:

$$3z^2 (2z^3)^2$$

In exercises 3 & 4, simplify the expression. Assume that denominators are not zero.

3.) $\frac{(uv^2)^3}{v^2u^3}$

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

5.) Simplify:

$$9z\sqrt{8z} - 3\sqrt{2z^3}$$

6.) Given the points $(-4, 3)$ and $(5, -1)$.

a.) Find the distance between the points.

b.) Find the midpoint of the line segment determined by the points.

In exercise 7 & 8, find the standard form equation of the circle.

7.) Center $(0, 0)$ with radius 2

8.) Center $(5, -3)$, with radius 4

In exercises 9 & 10, find the center and radius of the circle.

9.) $(x+5)^2 + (y+4)^2 = 9$

center _____ radius _____

10.) $x^2 + y^2 = 1$

center _____ radius _____

11.) Let $(3, 5)$ be the midpoint of the line segment with endpoints $(-1, 1)$ and (a, b) .
Determine a and b .

12.) Find the slope of the line through the points $(-1, -2)$ and $(4, -5)$.

13.) Find an equation in point-slope form for the line through the point $(2, -1)$ and slope $m = -2/3$.

14.) Find an equation of the line through the points $(-5, 4)$ and $(2, -5)$.

In exercise 15-20, find an equation in slope-intercept form for the line.

15.) The line through $(3, -2)$ with slope $m = 4/5$.

16.) The line through the points $(-1, -4)$ and $(3, 2)$.

17.) The line through $(-2, 4)$ with slope $m = 0$.

18.) The line $3x - 4y = 7$

19.) The line through $(2, -3)$ and parallel to the line $2x + 5y = 3$.

20.) The line through $(2, -3)$ and perpendicular to the line $2x + 5y = 3$.

In exercises 21- 34, solve each equation algebraically.

21.) $3x - 4 = 6x + 5$

22.) $\frac{x-2}{3} + \frac{x+5}{2} = \frac{1}{3}$

23.) $2(5 - 2y) - 3(1 - y) = y + 1$

24.) $3(3x-1)^2 = 21$

Solve using quadratic formula. No decimals in your answer.

25.) $x^2 - 4x - 3 = 0$

Solve using quadratic formula. No decimals in your answer. #26 only

26.) $16x^2 - 24x + 7 = 0$

27.) $6x^2 + 7x = 3$ Solve by factoring.

28.) $\frac{2x-3}{x+1} = 1$

29.) $x(2x + 5) = 4(x + 7)$

30.) $|4x+1| = 3$

31.) $4x^2 - 20x + 25 = 0$

32.) $-9x^2 + 12x - 4 = 0$

SOLVE:

33.) $\frac{3x}{x+1} + \frac{5}{x-2} = \frac{15}{x^2-x-2}$

State the domain: _____

Solution: _____

Solve 34.) $\frac{3}{x} - x = 2$

State the domain: _____

Solution: _____

35.) Use the quadratic formula to solve the equation
 $3x^2 + 4x - 1 = 0$

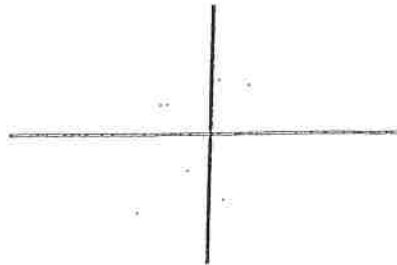
In exercises 36 & 37, use factoring to solve the equation.

36.) $3x^3 - 19x^2 - 14x = 0$

37.) $x^3 + 2x^2 - 4x - 8 = 0$ Factor by grouping.

In exercises 38 solve the equation graphically. (Sketch the graph using your calculator.)

38.) $x^3 - 2x^2 - 2 = 0$



Give the decimal answer from the calculator.

In exercises 39 & 40, solve the inequality and draw a number line graph of the solution.

39.) $-2 < x + 4 \leq 7$



40.) $5x + 1 \geq 2x - 4$



41.) Solve the inequality. $\frac{3x-5}{4} \leq -1$



42. Factor:
a) $z^3 + 125$



b) $8t^3 - 27$



43. Solve:
 $x^4 + x^2 - 6 = 0$

