Robbinsville High School
Mathematics Department
155 Robbinsville-Edinburg Road
Robbinsville NJ 08691

Dear Parents and Guardians,

We would like to take this opportunity to thank you for your support this year. Attached you will find a packet for math reinforcement for your student's use over the summer. This packet should be completed and returned to school with your student on the ***first full day of school***. September is filled with review, but with completion of this packet, the review will come very naturally. The packet will be **c*ollected*** and ***graded*** as **a large *homework grade*** based on ***completion*** and ***effort***.

In addition to this packet, we have provided for your student some resources for extra help. Below, you will find a variety of websites your student may want to visit over the summer to refresh their memory about the topics discussed in this packet.

- Math Forum at Drexel University: http://mathforum.org/dr.math/
- Purple Math: http://www.purplemath.com/
- Math Is Fun?: http://www.mathsisfun.com/
- Cut the Knot: http://www.cut-the-knot.org/MathHelp.shtml
- Cool Math (Algebra I): http://coolmath.com/algebra/Algebra1/index.html

Thank you again for your support throughout the year and we wish you a happy and safe summer vacation.

Happy Summer!

Robbinsville High School Mathematics Department

Pre Calculus
Summer Packet

Name:_____
Date:_____Prd:_____

Directions: Factoring quadratic expressions with $a = 1$. Factor each completely.

1) $x^2 - 3x - 18$

2) $x^2 + 6x - 40$

3) $x^2 - 15x + 56$

4) $x^2 - 6x + 8$

5) $x^2 - 14x + 40$

6) $x^2 - 3x - 54$

Directions: Factoring quadratic expressions with $a > 1$. Factor each completely.

7) $3x^2 + 4x + 4$

8) $3x^2 - 10x - 25$

9) $3x^2 - 7x - 10$

10) $3x^2 + 23x + 40$

11) $3x^2 - x - 2$

12) $4x^2 - 27x + 18$

Directions: Factoring quadratic expressions with Difference of Two Squares. Factor each completely.

13) $9x^2 - 16$

14) $9x^2 - 1$

15) $16x^2 - 25$

16) $25x^2 - 16$

Directions: Factoring quadratic expressions with Difference of Two Squares. Factor each completely.

17) $p^2 - 25$

18) $16x^2 - 9$

Directions: Factoring quadratic expressions with a Greatest Common Factor and $a = 1$. Factor each completely.

19) $3x^2 + 9x + 6$

20) $2x^2 - 16x + 14$

21) $3x^3 + 33x^2 + 54x$

22) $6x^4 - 6x^3 - 36x^2$

23) $2x^2 - 18x + 16$

Directions: Factoring quadratic expressions with a Greatest Common Factor and $a > 1$. Factor each completely.

24) $6x^2 + 32x - 70$

25) $15x^2 - 12x - 36$

26) $10x^3 - 44x^2 + 16x$

27) $15x^4 - 63x^3 - 162x^2$

28) $30x^2 + 66x - 216$

Directions: Divide each of the polynomials using long division.

29.) $(4x^2 - 9) \div (2x + 3)$

30.) $(2x^2 + 5x - 3) \div (x + 3)$

31.) $(11x + 20x^2 + 12x^3 + 2) \div (3x + 2)$

32.) $(12x^3 + 2 + 11x + 20x^2) \div (2x + 1)$

Directions: Divide each of the polynomials using synthetic division.

33.) $(p^4 + 5p^3 - 11p^2 - 25p + 29) \div (p + 6)$

34.) $(y^4 - 8y^3 + 10y^2 + 2y + 4) \div (y - 2)$

35.) $(8v^5 + 32v^4 + 5v + 20) \div (v + 4)$

36.) $(3x^3 - 4x^2 - 17x + 6) \div (3x - 1)$

Directions: Simplify completely and state and restrictions *(remember to factor when necessary)*.

37.) $\dfrac{2x+6}{4x-12}$

38.) $\dfrac{x^2+9x+20}{2x+8}$

39.) $\dfrac{6x+24}{x^2+7x+12}$

40.) $\dfrac{x^2-5x+6}{x^2+2x-15}$

41.) $\dfrac{y^2-2y-15}{4}\cdot\dfrac{8}{y+3}$

42.) $\dfrac{5n+15}{4n+8}\cdot\dfrac{2n+4}{3n+9}$

43.) $\dfrac{x^2-2x}{6}\div\dfrac{3x-6}{x}$

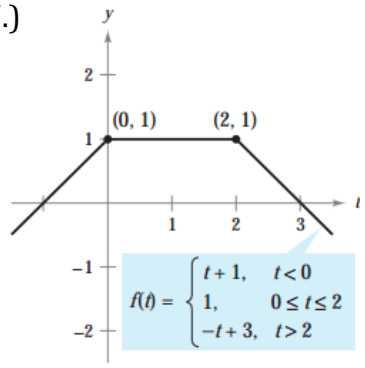
44.) $\dfrac{m^2-2m-8}{8m+24}\div\dfrac{2m-8}{m^2+7m+12}$

45.) $\dfrac{x+3}{10x+20}\cdot\dfrac{x+2}{x^2+4x+3}$

46.) $\dfrac{x^2-x-12}{x-4}\div\dfrac{2x+6}{x-5}$

Directions for 47-50: Given the following graphs determine domain and range and where the functions are increasing, decreasing or constant. Use N/A for properties that do not apply.

47.)



Domain:_____ Range:_____

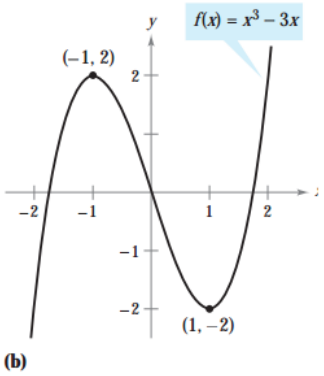
Increasing:_____ Decreasing:_____

Constant:_____

Maximum:_____ Minimum:_____

X intercept:_____ Y intercept_____

48.)



(b)

Domain:_____ Range:_____

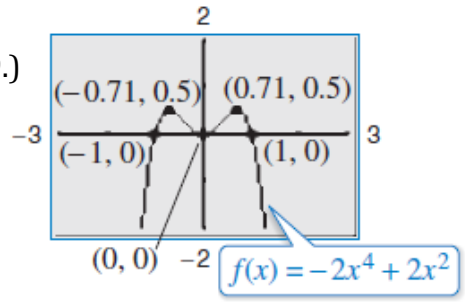
Increasing:_____ Decreasing:_____

Constant:_____

Maximum:_____ Minimum:_____

X intercept:_____ Y intercept_____

49.)



Domain:_____ Range:_____

Increasing:_____ Decreasing:_____

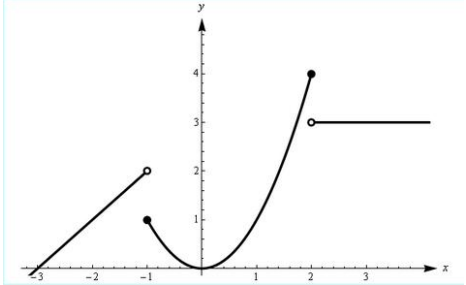
Constant:_____

Maximum:_____ Minimum:_____

X intercept:_____ Y intercept_____

50.)

$$f(x) = \begin{cases} x+3 & \text{if} \quad x<-1 \\ x^2 & \text{if} \quad -1 \le x \le 2 \\ 3 & \text{if} \quad x>2 \end{cases}$$



Domain:_____ Range:_____

Increasing:_____ Decreasing:_____

Constant:_____

Maximum:_____ Minimum:_____

X intercept:_____ Y intercept_____