Name _____

Neshaminy High School

Summer Packet for students entering College Prep or Honors Precalculus in September

Attached you will find a set of review problems from previous mathematics courses that are important for your success in Precalculus. Copy each problem onto a separate piece of loose-leaf paper. Remember to SHOW ALL Work you performed in order to arrive at your final answer. If you do not remember how to answer some of the problems, watch a video on khanacademy.org or youtube to help you remember the topics. All problems should be completed without a calculator.

This packet will be collected during the first week of school and will count as part of your first marking period grade. The first quiz will also be based on the problems in this packet.

1-6 Perform the indicated operation.

1) $\frac{1}{4}+\frac{2}{3}$ 2) $\frac{x}{2}-\frac{2x}{5}$ 3) $\frac{3}{2x}+\frac{4}{x^2}$

4) $\frac{2}{5}-\frac{3}{x}$ 5) $\frac{2}{7x}\cdot\frac{x^3}{8}$ 6) $\frac{2}{7x}\div\frac{x^3}{8}$

7-12 Simplify.

7) $x^2 \cdot x^3$ **8)** $(x^2)^3$ **9)** $(3x^2y)^{-2}$

10) $\frac{5x^{-3}}{y^{-2}}$ **11)** $\frac{x^{-1}y}{xy^{-2}}$ **12)** $(2^{-2})^{-3}$

13-18 Simplify each expression

13) $\sqrt{20}$ 14) $5\sqrt{40}$ 15) $2\sqrt{3}\cdot 3\sqrt{6}$

16) $\frac{3}{\sqrt{5}}$ 17) $\frac{5}{2-\sqrt{3}}$ 18) $(1+\sqrt{3})(1-\sqrt{3})$

19-24 Factor each polynomial completely.

19) $x^2 - 4x - 21$ 20) $6x^2 - 7x - 3$ 21) $x^4 - 81$

22) $y^4 + 6y^2 + 9$ 23) $2x^4 - 6x^2 + 8$ 24) $3y^2 - 75$

25-26 Solve each equation for y.

25) 7y + 6x = 10

26) $\frac{1}{4}y - 7x = \frac{15}{2}$

27-28 Find the solution of the system of equations. Write the answer in the form (x, y).

27) -2x – 5y = 7
7x + y = -8

28) 4x + 9y = 2
2x + 6y = 1

29-33 Find an equation in slope-intercept form of the line described.

29) The line through (3, -2) with slope $\frac{4}{5}$

30) The line through the points (-1, -4) and (3, 2)

31) The line through (-2, 4) with slope 0

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

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

34-40 Given $f(x) = x^2 - 4$ and $g(x) = \sqrt{2x + 4}$, determine each of the following.

34) f(3)

35) g(2)

36) f(g(4))

37) f(g(x))

38) Domain of f(g(x))

39) $f^{-1}(x)$

40) Is the inverse of f(x) a function?

41) Match the equation to its description.

_____	f(x) = $\lvert 4x+5 \rvert$	A. Linear Function
_____	f(x) = $\sqrt[3]{4x+5}$	B. Quadratic Function
_____	f(x) = $\frac{1}{4x+5}$	C. Absolute Value Function
_____	f(x) = $(4x+5)^4 - 3(3x+5)^3$	D. Cubic Function
_____	f(x) = $(4x+5)^3$	E. Cube Root Function
_____	f(x) = $(4x+5)$	F. Square Root Function
_____	f(x) = $(4x+5)^2$	G. Rational Function
_____	f(x) = $\sqrt{4x+5}$	H. Polynomial Function