

**FOR ALL STUDENTS TAKING PRE-CALCULUS  
2021-2022**

**SUMMER REVIEW PACKET**

NAME \_\_\_\_\_

To all Orangeburg Prep Math Students:

In an effort to continue to improve our standardized test scores and prevent knowledge loss over the summer break, you are asked to complete the attached worksheets and be prepared to turn them in on the first day of classes. The questions in the packet focus on the skills you were taught in your previous math courses. Some problems may be a bit involved, so it is not a good idea to wait until the last minute.

Work needs to accompany each problem and all answers should be in simplified form. The PRINTED packet is due at the beginning of class on Aug. 19 and will be counted as a project grade. A score of 80% will be given if every problem is attempted. Additional points, up to 20%, will be given for accuracy.

You will also be given a quiz on this packet during the first week of school, so make sure to bring questions that you have during Open House on Aug. 17. Any assignment not turned in on time will receive a 10 point deduction for each day that it is late.

Enjoy your summer vacation and your math packet. We look forward to a great school year starting in August.

The Math Department

HONOR CODE: I promise that I completed this summer review packet independently from any other student. I used only the resources given in this packet. **I did NOT use Photomath or any similar program!**

PARENT: \_\_\_\_\_

STUDENT: \_\_\_\_\_

**Helpful Websites**

[www.regentsprep.org](http://www.regentsprep.org)

[www.khanacademy.org](http://www.khanacademy.org)

[www.purplemath.com/modules](http://www.purplemath.com/modules)

[www.Aleks.com](http://www.Aleks.com) (a website where you can subscribe for individual math lessons)

Classify each numbers as (a) natural number, (b) integer, (c) rational number, (d) irrational number. Give all that apply.

1.  $-14$

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2.  $\frac{5}{2}$

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3.  $\sqrt{6}$

---

4.  $0$

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Simplify the following statements, leaving only positive exponents when necessary.

5.  $\sqrt{5}\sqrt{25}$

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6.  $\frac{\sqrt{72}}{\sqrt{2}}$

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7.  $\left(\frac{3^2}{5^2}\right)^{-3}$

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8.  $2(27)^{\frac{2}{3}}$

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9.  $\left(\frac{25}{16}\right)^{-\frac{1}{2}}$

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10.  $\log 3 - \log 8$

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11.  $\log_3 u + 5\log_3 v$

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**Write in simplest radical form. Give exact answers only, no decimals.**

12.  $\sqrt{25x^5}$

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13.  $\sqrt[3]{\frac{2x^3}{27}}$

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14.  $\sqrt{50} - \sqrt{18}$

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15.  $(3 - \sqrt{8})(5 + \sqrt{2})$

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$$16. (3\sqrt{2} - 4\sqrt{6})^2$$

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$$17. \frac{1}{2 - \sqrt{3}}$$

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**Perform the required operations and simplify your answer.**

$$18. (x^2 - 2x + 1)(x^3 - 1)$$

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$$19. \frac{4x - 6}{(x - 1)^2} \div \frac{2x^2 - 3x}{x^2 + 2x - 3}$$

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$$20. \frac{2}{x} - \frac{3}{x - 1} + \frac{4}{x + 1}$$

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$$21. \frac{\frac{1}{2x - 3} - \frac{1}{2x + 3}}{\frac{1}{2x} - \frac{1}{2x + 3}}$$

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$$22. \sqrt{-75}$$

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23.  $(3 + 2i) - (6 + 13i)$

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24.  $(1 + 6i)(5 - 2i)$

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25.  $\frac{4}{-3i}$

---

**Factor completely.**

26.  $3x^2 + 14x + 8$

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27.  $x^3 - 1$

---

28.  $27y^2 - 12$

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29.  $x^3 - x^2 + 2x - 2$

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**Solve each equation.**

30.  $3x - 2(x + 5) = 10$

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

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32.  $\frac{1}{x - 2} = 3$

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33.  $6x = 3x^2$

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34.  $3x^2 + 1 = 0$

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35.  $x^2 + 6x - 3 = 0$

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36.  $12x^3 - 84x^2 + 120x = 0$

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$$37. \frac{4}{x-3} - \frac{4}{x} = 1$$

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$$38. \sqrt{x-2} - 8 = 0$$

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$$39. |x-5| = 10$$

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$$40. |x^2 - 3| = 2x$$

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**Solve each inequality.**

$$41. \frac{1}{2}(3-x) > \frac{1}{3}(2-3x)$$

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$$42. \frac{x}{5} - 6 \leq -\frac{x}{2} + 6$$

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$$43. x^2 - 4 \leq 0$$

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$$44. x^2 - 2x \geq 3$$

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$$45. \frac{x-5}{3-x} < 0$$

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$$46. \frac{2}{x+1} \leq \frac{3}{x-1}$$

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$$47. |x-2| < 1$$

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**Write an equation for the line described.**

48. passes through ( 5, -1) and (-5, 5)

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49. passes through ( -6, 4) and is perpendicular to  
the line  $3x + 4y = 7$

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**Answer the following questions about functions.**

50. Find the domain of  $f(x) = \frac{x+6}{2x-1}$

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51. Find the domain of  $f(x) = \sqrt{3x+6}$

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52. Find  $f \circ g$  when  $f(x) = x^2 - 3x$  and  $g(x) = 2x$

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