

Summer Packet for Students Entering Pre-Calculus Honors

Directions:

1. Please complete all questions in the work space provided or on a separate sheet of paper that is clearly and neatly numbered.
2. You must show all your work for each question. If you are stuck, please use the resource links provided in the section.
3. Your teacher will check this assignment on the FIRST day of school at the beginning of class. This will be your first completion grade so make sure you have attempted each problem.
4. If there are questions that you had a difficult time with, please list them in the box below (or highlight them on a separate sheet of paper). We expect you to use the resources provided if you are stuck, but understand there may be additional support needed for some questions.

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Assessment:

1. On the second day of math, you will have a summative quiz based on the skills on this summer packet.
2. You will get 5 points for bringing your TI-84 CE Plus to class with you on the day of the test. This is a required tool that you will use throughout high school.

Extra Support:

1. The math department will have extra help days for the summer packet close to the return of school. Please check the school's website during the summer for the dates.
2. On the first day back to school, we will dedicate time in class to go over the answers and for you to ask your teacher questions.

This packet is to be completed by students entering Pre-Calculus Honors for the 2023-24 school year. There are resources linked for each section if you get stuck.

SKILL 1: SIMPLIFYING EXPRESSIONS

Need Help?

Simplify the following expressions and write your answer as an integer or a fraction.

1. $\frac{2^3-5}{6}$

2. $(8 + 5) \times \frac{35}{5} + 6$

3. $\frac{45}{8(5-4)-3}$

4. $8 \times \frac{15}{5} - (5 + 9)$

5. $\frac{49}{7} \times \frac{60}{2 \times 5}$

6. $(\frac{12}{3} \times 3)^2$

Simplify the following expressions. Make sure to combine like terms.

7. $4x + x(13 - 5x)$

8. $2(x + 3) - 5(2x - 1)$

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

10. $9a - 4ab + 3b - 4a + 10ab$

11. $3x^2 + 5x(x + 3) - 4$

12. $(x + 2)^2 - 2(2x + 1)$

SKILL 2: EXPONENT LAWS

Need Help?

Simplify the following. Write your answers with positive exponents only.

1. $\frac{x^3y^5}{9x^2y}$

2. $3x^3y \cdot 2x^5y^3$

3. $\frac{a^5a^2}{a^4}$

4. $\left(\frac{x^{-2}}{y^3}\right)^5$

5. $(x^0y^6)^{-1}$

6. $\frac{2^3}{(3m)^{-2}}$

7. $\frac{(4\sqrt{x})^2}{y^{-1}}$

8. $(ma^6)^2 \frac{1}{m^3a^2}$

9. $\left(\frac{2x^4y^{-2}}{xy^3}\right)^{-1}$

10. $\left(\frac{3x^{-8}y^{-2}}{27xy^{-5}}\right)^{-2}$

SKILL 3: RADICAL OPERATIONS

Need Help?

Write the following using a radical (ex: square root).

1. $x^{\frac{1}{2}}$

2. $x^{\frac{2}{3}}$

3. $x^{\frac{-5}{2}}$

4. $x^{\frac{3}{5}}$

$x^{\frac{2}{3}}$

Write the following in simplest radical form.

5. $\sqrt{400x^4}$

6. $\sqrt{60x^5}$

7. $2x\sqrt{100x^3}$

8. $3\sqrt{44z} + \sqrt{99z}$

9. $\sqrt{147k^3}$

10. $\sqrt{72c} - 2\sqrt{2c}$

11. $\sqrt[3]{24x^6}$

12. $\sqrt[5]{1024c^{10}}$

SKILL 4: POLYNOMIALS

Need Help?

For the following, perform the indicated operation. Simplify the answer ensuring you combine like terms.

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

2. $(2x^2 - 8x + 5) + (4x^2 + 4x - 10)$

3. $(6m^2 + 24m + 24) - (3m^2 - 6m + 3)$

4. $(4a^2 + a - 7)(4a^2 - 1)$

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

6. $(x + y)(x^2 - xy + y^2)$

7. $(11b^4 - 6b^3 + 18b^2) - (8b^3 + 9b^2 - 4b + 1)$

8. $(49p^2 - 25) + (16p^4 - 32p^2 + 16)$

9. $(12x^2 + 3x) - (8x^2 - 19)$

10. $(9m - 11)(11m - 9)$

SKILL 5: FACTORING

Need Help?

1. $18w^2 - 27w$

2. $x^3 + 3x^2 + 8x + 24$

3. $10x^2 + 13x - 3$

4. $5x^2 - 30x + 40$

5. $64m^3 - mn^2$

6. $3k^3 + 24k^2 + 45k$

7. $x^2 - 5x + 6$

8. $x^2 - 8x + 15$

9. $25x^2 - 121$

10. $n^3 - n^2 - 42n$