

**Cherry Creek High School
Summer Assignment for students entering:
Pre-Calculus/Trigonometry**

Please have the following worksheets completed and ready to be handed in on the first day of class, August 14, 2024. Make sure you show your work where appropriate. Answers are provided for you to check; however, you will not be given credit if you don't show work on problems that require it. It is expected that you have a good understanding of this material coming into these courses as teachers will not be doing an extensive review of previously learned material.

Have a great summer and we look forward to seeing you in the fall!

The CCHS Math Department

PCT Summer Packet
Worksheet 1
Algebra Review - No Calculator

Simplify each expression.

1. $5(x + y) - 4(3x - 2y + 1)$

2. $4x^2(7x + 5) - 3x^2 - 2(x^3 - x)$

3. $(2y^3 + 2y^2 - y + 16) - (5y^3 + 3y - 3)$

4. $4y(2 - y)^2 + 3y^2$

5. $\frac{30x^2 + 20x - 10}{-5}$

6. $\frac{6x^4 + 27x^5 + 3x^2 + 3x}{3x^2}$

Evaluate each expression at the given value.

7. $-4x^2 + 6x - 5$ when $x = -3$

8. $6|4b - 5| - 3|2 - 2b|$ when $b = 2$

Solve for x.

9. $5x - 7(x - 8) = 48$

10. $\frac{x}{7} - 12 = -19$

11. $\frac{x}{3} + \frac{2}{5} = 1$

12. $7x + 6 = 4(x - 9)$

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

14. $\frac{6x - 2}{3} + \frac{x - 3}{2} = \frac{1}{5}$

Solve the inequality for x. Show all work.

15. $3 + 2x < 7x - 22$

16. $4(3 - 2x) \geq -x - 37$

17. $3x + 2(x - 1) \geq \frac{x}{2} - 6$

Solve the system for x and y. Show all work.

18. $2x - y = 14$
 $5x + y = 63$

19. $-3x - 5y = -31$
 $-7x + 2y = -45$

PCT Summer Packet
Worksheet 2
Algebra Review - No Calculator

Multiply.

1. $(x + 7)(x - 7)$

2. $(3x - 1)(4x + 3)$

3. $(x + 11)^2$

4. $(4 - 5x)(2x - 9)$

5. $(7x + y)(x - 3y)$

6. $(x - 4)(x^2 - 3x + 1)$

Factor using GCF.

7. $3x^2 + 15x$

8. $-4x^2 - 20x$

9. $5x^3y^2 + 35x^2y^5$

Factor using difference of squares.

10. $x^2 - 9$

11. $4x^2 - 25y^2$

12. $1 - 9x^2$

Factor the trinomial.

13. $x^2 + 14x - 32$

14. $2x^2 + 7x - 4$

15. $2x^2 - 11x - 21$

16. $x^2 + 7x + 12$

17. $12x^2 + 5x - 2$

18. $12x^2 + 12x - 9$

Factor using grouping.

19. $x^3 - 3x^2 - 2x + 6$

20. $x^3 + x^2 - 9x - 9$

21. $x^3 + 3x^2 - 4x - 12$

Factor using a combination of methods.

22. $x^3 + 6x^2 + 5x$

23. $3x^5 - 75x^3$

24. $x^5 - 7x^3 - 18x$

PCT Summer Packet
Worksheet 3
Algebra Review - No Calculator

Solve for x (using factoring). Show all work.

1. $x^2 - 14x + 40 = 0$

2. $x^2 + 15x - 100 = 0$

3. $x^2 - 22 = 9x$

4. $x^2 - 121 = 0$

5. $9x^2 - 49 = 0$

6. $x^2 + 12x + 36 = 0$

7. $3x^2 + 14x - 5 = 0$

8. $6x^2 - 5x - 6 = 0$

9. $x^3 + 8x^2 - 48x = 0$

Solve for x (using the quadratic formula). Show all work.

10. $x^2 - 4x + 2 = 0$

11. $x^2 - 5x - 7 = 0$

12. $x^2 + 5x + 7 = 0$

PCT Summer Packet
Worksheet 4
Algebra Review - No Calculator

Simplify each with positive exponents only.

1. x^2x^6

2. $(6x^4y^5)(7x^5y)$

3. $\frac{x^7}{x^2}$

4. $(-2x^5y)^3$

5. $\left(\frac{6yx^6}{3y^4x^{-2}}\right)^4$

6. $\frac{2x^2\ddot{\circ}^{-2}}{\ddot{\circ} m^3\ddot{\circ}^{\frac{1}{2}}}$

Simplify.

7. $\sqrt{27}$

8. $\sqrt{250}$

9. $4\sqrt{45} + 2\sqrt{20}$

Simplify.

10. $8^{\frac{2}{3}}$

11. $16^{-\frac{1}{2}}$

12. $27^{\frac{4}{3}}$

Pre-calculus/Trig
Summer Packet Answers

- Worksheet 1 Answers: 1. $-7x + 13y - 4$ 2. $26x^3 + 17x^2 + 2x$ 3. $-3y^3 + 2y^2 - 4y + 19$
4. $4y^3 - 13y^2 + 16y$ 5. $-6x^2 - 4x + 2$ 6. $9x^3 + 2x^2 + 1 + \frac{1}{x}$ 7. -59 8. 12
9. $x = 4$ 10. $x = -49$ 11. $x = \frac{9}{5}$ 12. $x = -14$ 13. $x = -\frac{33}{2}$ 14. $x = \frac{71}{75}$ 15. $(5, \infty)$
16. $(-\infty, 7]$ 17. $\left[-\frac{8}{9}, \infty\right)$ 18. $(11, 8)$ 19. $(7, 2)$
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- Worksheet 2 Answers: 1. $x^2 - 49$ 2. $12x^2 + 5x - 3$ 3. $x^2 + 22x + 121$
4. $-10x^2 + 53x - 36$ 5. $7x^2 - 20xy - 3y^2$ 6. $x^3 - 7x^2 + 13x - 4$ 7. $3x(x + 5)$
8. $-4x(x + 5)$ 9. $5x^2y^2(x + 7y^3)$ 10. $(x + 3)(x - 3)$ 11. $(2x - 5y)(2x + 5y)$
12. $(1 + 3x)(1 - 3x)$ 13. $(x + 16)(x - 2)$ 14. $(2x - 1)(x + 4)$ 15. $(2x + 3)(x - 7)$
16. $(x + 3)(x + 4)$ 17. $(4x - 1)(3x + 2)$ 18. $3(2x - 1)(2x + 3)$ 19. $(x^2 - 2)(x - 3)$
20. $(x + 1)(x - 3)(x + 3)$ 21. $(x + 2)(x - 2)(x + 3)$ 22. $x(x + 5)(x + 1)$
23. $3x^3(x + 5)(x - 5)$ 24. $x(x - 3)(x + 3)(x^2 + 2)$
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- Worksheet 3 Answers: 1. $x = 4, 10$ 2. $x = -20, 5$ 3. $x = -2, 11$ 4. $x = \pm 11$ 5. $x = \pm \frac{7}{3}$
6. $x = -6$ 7. $x = -5, \frac{1}{3}$ 8. $x = -\frac{2}{3}, \frac{3}{2}$ 9. $x = -12, 0, 4$ 10. $2 \pm \sqrt{2}$ 11. $\frac{5 \pm \sqrt{53}}{2}$ 12. no sol.
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- Worksheet 4 Answers: 1. x^8 2. $42x^9y^6$ 3. x^5 4. $-8x^{15}y^3$ 5. $\frac{16x^{32}}{y^{12}}$
6. $\frac{m^6}{4x^4}$ 7. $3\sqrt{3}$ 8. $5\sqrt{10}$ 9. $16\sqrt{5}$ 10. 4 11. $\frac{1}{4}$ 12. $\frac{1}{81}$
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