

Cherry Creek High School

Prerequisite Packet for Students Entering Pre-calculus/Trigonometry Honors

The following set of problems represents content your teachers will expect you to know and recall from Algebra 1, Geometry, and Algebra 2. This is prerequisite content knowledge for students entering into the Pre-calculus with Trigonometry Honors course.

It is expected that each student entering this class looks over this packet and ensures that they know and can demonstrate all the skills required to complete the problems in this packet without the use of a calculator.

This packet will NOT be collected, but there will be a **Prerequisite Assessment** within the first week of classes that will cover this content.

If a student DOES NOT pass the Prerequisite Assessment with an 85% or better, then they WILL be required to complete and submit the Prerequisite Packet and retake the Prerequisite Assessment until they show mastery of the content at 85% or greater.

Our recommendation is that every student reviews and completes this packet prior to the start of the school year.

Topics included in this packet that are expected for mastery prior to entering this course include the following:

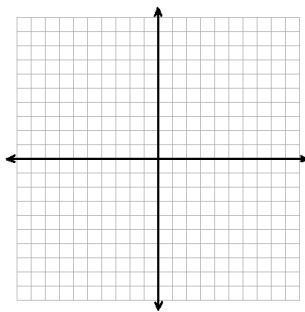
1. [Graphing lines \(in any form\)](#) and [graphing quadratics in vertex form](#)
2. Simplifying expressions using [properties of exponents](#)
3. [Simplifying radical expressions](#)
4. [Multiplying](#), [dividing](#), and [factoring](#) polynomial expressions
5. Solving quadratic equations using [factoring](#) or the [Quadratic Formula](#)

Click on any hyperlink above for video resources on that topic.

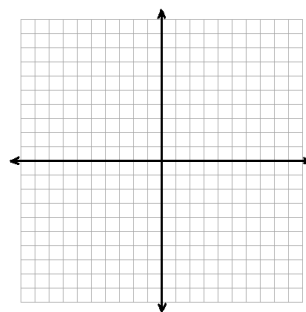
Pre-calculus/Trigonometry Honors Prerequisite Packet – No Calculator

Graph each function with precision.

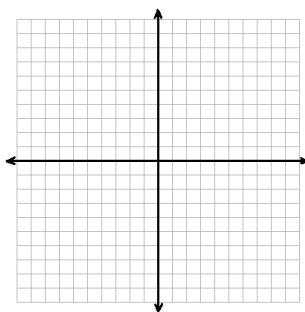
1. $y = 3x - 4$



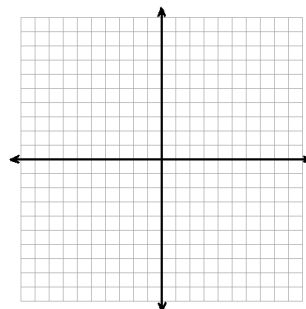
2. $y - 5 = \frac{3}{2}(x - 2)$



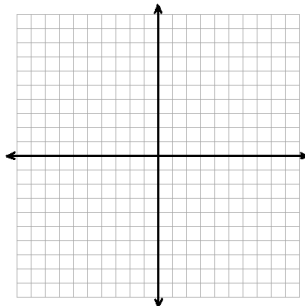
3. $5x - 4y = 20$



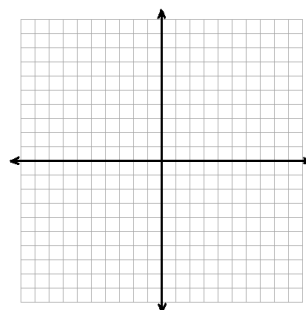
4. $y + 3 = -\frac{2}{5}(x + 4)$



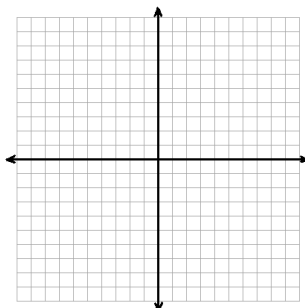
5. Graph the line through $(-3, -1)$ parallel to $f(x) = -\frac{8}{5}x + 3$



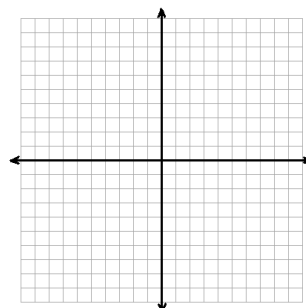
6. Graph the line through $(4, -2)$ perpendicular to $y = \frac{3}{4}x - 2$



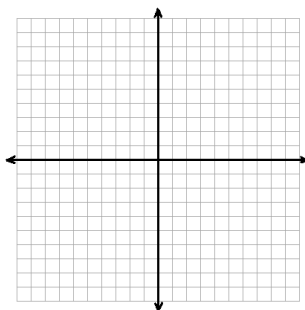
7. $f(x) = (x - 4)^2 - 5$



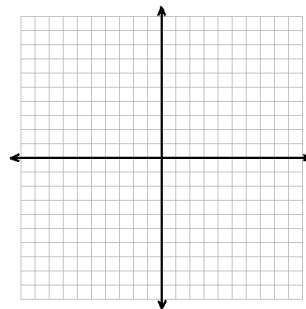
8. $y = -(x + 2)^2 + 9$



9. $g(x) = 2(x - 3)^2 - 8$



10. $y = -3(x + 1)^2 + 3$



Solve the equation. Show all work.

11. $5x - 7(x - 8) = 48$

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

Simplify the expression. Your answer should contain positive exponents.

13. $6x^4y^5 \cdot 7x^5y$

14. $(-2x^5y)^3$

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

16. $\left(\frac{2x^2}{m^3}\right)^{-2}$

Multiply or divide. Write your answer as the sum of monomial terms.

17. $(x - 4)(x + 4)$

18. $(x + 11)^2$

19. $(3x - 1)(4x + 3)$

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

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

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

Evaluate the expression. Show all work.

23. $\sqrt{27}$

24. $\sqrt{250}$

25. $4\sqrt{45} + 2\sqrt{20}$

26. $8^{2/3}$

27. $16^{-1/2}$

28. $27^{-4/3}$

Factor the greatest common factor (GCF) from each expression.

29. $3x^2 + 15x$

30. $-4x^2 - 20x$

31. $10x^3y^2 + 35x^2y^5$

Factor the difference of squares.

32. $x^2 - 9$

33. $4x^2 - 25y^2$

34. $1 - 9x^2$

Factor the trinomial. Then, solve for x. Show all work.

35. $x^2 + 14x - 32 = 0$

36. $2x^2 + 7x - 4 = 0$

37. $2x^2 - 11x - 21 = 0$

38. $12x^2 + 5x = 2$

39. $12x^2 - 9 = -12x$

40. $x^2 - 10x = 24$

Factor by grouping.

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

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

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

Factor completely using a combination of methods.

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

45. $3x^5 - 75x^3$

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

Solve the inequality. Write the solution in interval notation. Show all work.

47. $3 + 2x < 7x - 22$

48. $4(3 - 2x) \geq -x - 37$

Solve the system of equations. Show all work.

49. $2x - y = 14$
 $5x + y = 63$

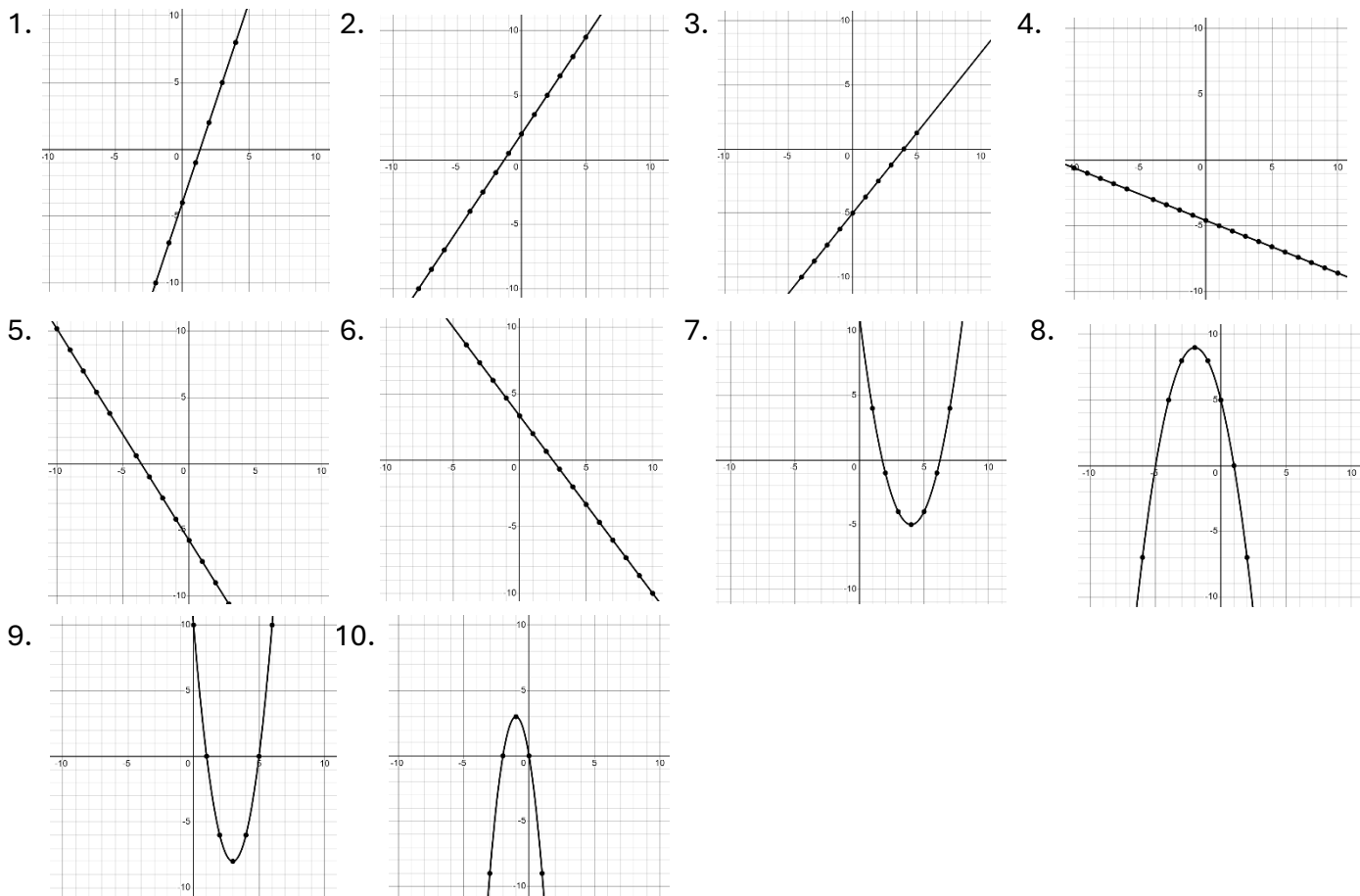
50. $-3x - 5y = -31$
 $-7x + 2y = 45$

Solve for x using the Quadratic Formula. Show all work.

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

52. $4x^2 + 12x - 9 = 0$

53. $x^2 + 5x = -7$



11. $x = 4$

12. $x = -33/2$

13. $42x^9y^6$

14. $-8x^{15}y^3$

15. $\frac{16x^{32}}{y^{12}}$

16. $\frac{m^6}{4x^4}$

17. $x^2 - 16$

18. $x^2 + 22x + 121$

19. $12x^2 + 5x - 3$

20. $x^3 - 7x^2 + 13x - 4$

21. $-6x^2 - 4x + 2$

22. $2x^2 + 9x^3 + 1 + x^{-1}$

23. $3\sqrt{3}$

24. $5\sqrt{10}$

25. $16\sqrt{5}$

26. 16

27. $\frac{1}{4}$

28. $\frac{1}{81}$

29. $3x(x + 5)$

30. $-4x(x + 5)$

31. $5x^2y^2(2x + 7y^3)$

32. $(x + 3)(x - 3)$

33. $(2x + 5y)(2x - 5y)$

34. $(1 + 3x)(1 - 3x)$

35. $(x + 16)(x - 2)$
 $x = -16, x = 2$

36. $(2x - 1)(x + 4)$
 $x = \frac{1}{2}, x = -4$

37. $(2x + 3)(x - 7)$
 $x = -\frac{3}{2}, x = 7$

38. $(4x - 1)(3x + 2)$
 $x = \frac{1}{4}, x = -\frac{2}{3}$

39. $3(2x - 1)(2x + 3)$
 $x = \frac{1}{2}, x = -\frac{3}{2}$

40. $(x - 12)(x + 2)$
 $x = 12, x = -2$

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

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

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

44. $x(x + 5)(x + 1)$

45. $3x^3(x + 5)(x - 5)$

46. $x(x^2 + 2)(x + 3)(x - 3)$

47. $(5, \infty)$

48. $(-\infty, 7]$

49. $(11, 8)$

50. $(7, 2)$

51. $2 \pm \sqrt{2}$

52. $\frac{-3 \pm 3\sqrt{2}}{2}$

53. $\emptyset$