

Honors PreCalculus Summer Review Packet

TO: All 2017-2018 Honors PreCalculus Students

FROM: Honors PreCalculus Teachers

We are pleased that you have chosen to continue your math sequence by enrolling in Honors PreCalculus for next year. To help ensure your success in Honors PreCalculus next year, we have created a summer review work packet. This packet contains material that you must have knowledge of on the 1st day of the course. The packet has problems from Integrated 1, Integrated 2, and Integrated 3 (Algebra, Geometry, & Advanced Algebra).

THIS PACKET IS TO BE COMPLETED IN THE FOLLOWING MANNER:

- Work must be clearly enumerated and in consecutive order on **separate paper**.
- Each problem, with work, counts toward the total grade.
- Each problem must have **WORK!** **NO WORK = NO CREDIT**
- **THE PACKET WITH WORK IS DUE ON THE FIRST FULL DAY OF SCHOOL.**
- **THE PACKET IS DUE WHETHER OR NOT YOU ARE PRESENT IN SCHOOL.**

THE PACKET HAS BEEN DIVIDED IN TO THE FOLLOWING CATEGORIES:

Linear Equations	Quadratics	Rational Expressions
Solving Linear Equations	Domain & Range	Right Triangle Trigonometry
Linear Systems	Operations with Exponents	Trigonometric Functions

HELPFUL HINTS TO COMPLETING THE PACKET OVER THE SUMMER:

- Do little of the math packet each day – you are not expected to complete it all in one day
- Pace yourself, plan to do a portion each week.
- Resources you may want to use:
 - Use your Integrated 1, Integrated 2, and Integrated 3 notes.
 - khanacademy.org
 - purplemath.com
 - mathforum.org
 - wolframalpha.com

Honors Pre-Calculus Supplies Needed:

- Pencils/Erasers
- Binder/Notebook
- Paper
- Graphing Calculator ***** It is recommended that you have a graphing calculator every day in class and at home. If you don't already have a TI-83, TI-84, or TI-Nspire and are going to purchase a graphing calculator, we recommend the TI-Nspire CX which will be used extensively in class.

There are free apps for a graphing calculators!! Search: Wabbitemu, Desmos or graphing calculator

Honors PreCalculus Summer Review Packet

This packet is a review of information you learned in Algebra, Geometry, & Advanced Algebra. You need to know this information to be successful in PreCalculus. Therefore, this packet is due on your **FIRST DAY IN PRECALCULUS**. It is to be completed CORRECTLY, NEATLY, and on SEPARATE sheets of paper.

Your PreCalculus teacher will collect your work on your **FIRST DAY IN PRECALCULUS**. Failure to turn in your completed work on your **FIRST DAY IN PRECALCULUS** may jeopardize your ability to remain in the course.

LINEAR EQUATIONS

Write the appropriate Linear Equation for each of the following.

1. The point-slope form given $(-3, 10)$ with $m = -4$.
2. The standard form given $(-2, 6)$ & $(5, 2)$.
3. The slope-intercept form given $(-1, -5)$ & $(6, 0)$.
4. The slope-intercept form given $(6, -5)$ & perpendicular to $-5x - 7y = -17$.
5. The standard form of the line parallel to the given line $y = 3x$.

<https://www.khanacademy.org/math/algebra/two-var-linear-equations/forms-of-two-var-linear-equations>

SOLVING LINEAR EQUATIONS

Solve each Linear Equation for the stated variable.

6. Solve for x .
 $5x + 3(x - 2) = 4x + 1$
7. Solve for m .
 $g = 4cm - 3m$
8. Solve for x .
 $-(1 + 7x) - 6(-7 - x) = 36$

<https://www.khanacademy.org/math/algebra/one-variable-linear-equations>

LINEAR SYSTEMS

Solve the following Linear Systems.

9. $3x + 4y = 12$
 $2x - 3y = -9$
10. $2x + 9y - 5 = 0$
 $5y - x = 26$
11. $y = \frac{2}{3}x + \frac{7}{3}$
 $6y - 4x = 14$

<https://www.khanacademy.org/math/algebra/systems-of-linear-equations>

12. The school that Stephan goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 3 senior citizen tickets and 1 child ticket for a total of \$38. The school took in \$52 on the second day by selling 3 senior citizen tickets and 2 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

13. For what value of b would the following system of equations have an infinite number of solutions?

$$\begin{aligned}9x + 12y &= 21 \\6x + 8y &= 7b\end{aligned}$$

QUADRATICS

Solve by completing the square.

14. $x^2 + 10x - 25 = 0$

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

<https://www.khanacademy.org/math/algebra/quadratics/solving-quadratics-by-completing-the-square/v/solving-quadratic-equations-by-completing-the-square>

Solve the equation using the quadratic formula.

16. $2x^2 - 14x + 40 = 3x^2 - 16x + 32$

17. $x^2 - 4 = 3x$

<https://www.khanacademy.org/math/algebra/quadratics/solving-quadratics-using-the-quadratic-formula/v/quadratic-formula-1>

Solve the equation by factoring.

18. $4x^2 - 1 = 0$

19. $x^2 + 3x = 10$

20. $5x^2 - 32x - 21 = 0$

21. $x^2 - 11x + 19 = -5$

22. $27x^2 + 18x = 0$

23. $2x^2 + 20x + 12 = 5x - x^2$

<https://www.khanacademy.org/math/algebra/polynomial-factorization>

Solve by using your Graphing Calculator. Round answers to the nearest thousandths (3 decimal places).

24. $x^2 - 8x = -18$

25. $13x^2 + 24x - 1 = 14$

https://www.youtube.com/watch?v=JHUju_Qkqbg

DOMAIN & RANGE

Determine the domain and range of the following relation or function.

26. $(1, 2), (-3, 8), (-9, 6), (\frac{1}{2}, 5)$

27. $y + 9x = 15$

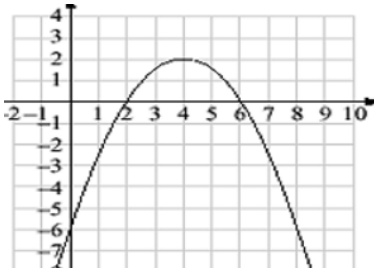
28. $y = x^4 + 3x^3 - x^2 - 5x$

29. $y = \sqrt{x+1} - 3$

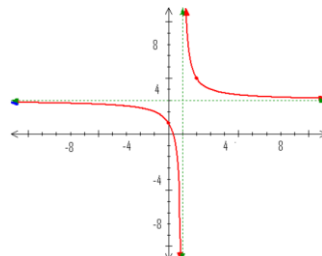
30. $y = 6 - |x|$

31. $y + 3x^2 = x - 2$

32.



33.



<https://www.khanacademy.org/math/algebra/algebra-functions#domain-and-range>

OPERATIONS WITH EXPONENTS

Simplify the following expressions; assume no variable is equal to zero.

34. $(2x^4)^{-3}$

35. $(\frac{3}{x^{-3}})^7$

36. $\frac{5x^3y^9}{30x^4y^{-2}}$

37. $\frac{xy^9}{2y^2} \cdot \frac{-7y}{21x^{-5}}$

38. $(x^{\frac{5}{3}}y)(x^{-4}y)^{\frac{1}{2}}$

<https://www.khanacademy.org/math/algebra/rational-exponents-and-radicals#alg1-exp-prop-review>

RATIONAL EXPRESSIONS

Factor and/or Reduce the following Rational Expressions.

39. $\frac{x^2+x-6}{x^2-4}$

40. $\frac{x^2+x-12}{5x-15}$

Complete each rational operation.

41. $\frac{3}{x+5} - \frac{x}{5}$

42. $\left(\frac{3x^2+7x-6}{9x^2-4}\right) \cdot \left(\frac{15x^2+4x-4}{9-x^2}\right)$

43. $\frac{\frac{x^2-1}{5x}}{\frac{x+1}{5x^2+10}}$

44. For which nonnegative value of x is the expression $\frac{5+x}{25-x^2}$ undefined?

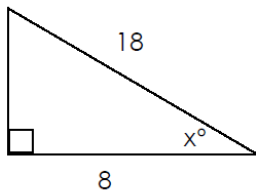
<https://www.khanacademy.org/math/algebra2/rational-expressions-equations-and-functions>

RIGHT TRIANGLE TRIGONOMETRY

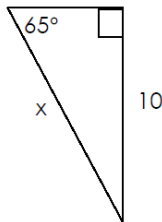
Using right triangle trigonometry, determine the measure of the missing side or angle. Round answers to the nearest thousandths (3 decimal places).

<https://www.khanacademy.org/math/trigonometry/trigonometry-right-triangles>

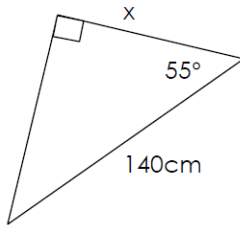
45.



46.



47.



48. Find to the nearest degree, the measure of the smaller acute angle of a right triangle whose sides are 7, 24, and 25.

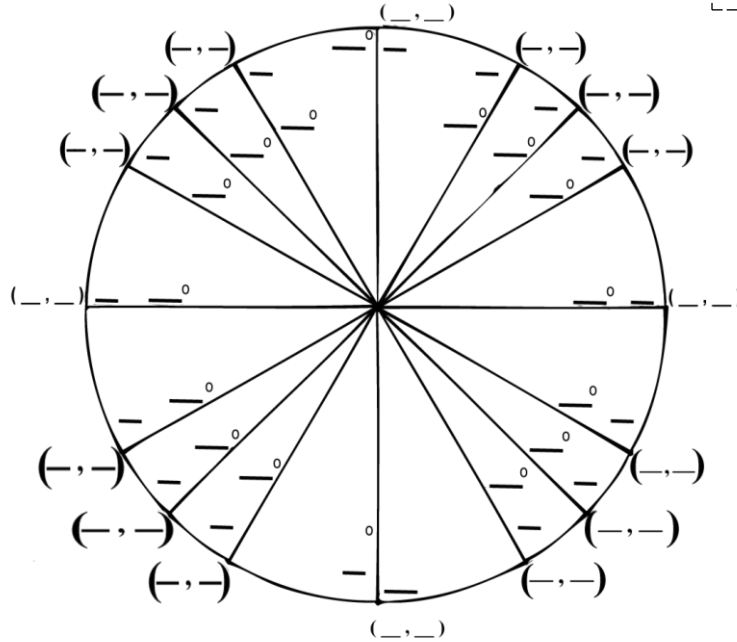
49. A man standing 24 feet from a flagpole observes the angle of elevation of its top to be 38° . Find the height of the flagpole to the nearest tenth.

TRIGONOMETRIC FUNCTIONS

<https://www.khanacademy.org/math/trigonometry/unit-circle-trig-func>

Without any aids, fill in the Unit Circle.

50.



Without a calculator, determine the exact value of each expression.

51. $\sin \frac{\pi}{2}$

52. $\sin \frac{3\pi}{4}$

53. $\cos 180^\circ$

54. $\cos \frac{7\pi}{6}$

55. $\cos 60^\circ$

56. $\tan \frac{7\pi}{4}$

57. $\tan \frac{2\pi}{3}$

58. $\tan \frac{\pi}{2}$