

Honors Pre-Calculus Summer Work

Welcome to the wonderful world of honors pre-calculus! During this year, you'll make connections between algebra and geometry, more fully investigate trigonometry, explore exponentials, logarithms, sequences, series, limits, probability and more. You will be responsible for your own learning, including this assignment. The summer assignment should primarily be review of algebra 2 concepts, some geometry, and (perhaps) getting familiar with your calculator.

Calculator Information

You are required to have a graphing calculator. Class directions are geared toward the TI-84 (or 83). We *strongly* recommend this type of graphing calculator. If you have any other type of calculator, you must bring its manual along with you every day.

If you don't have it anymore, we're positive you can find an electronic version of any calculator manual on the internet with very little searching.

Course Information

This class will have a large emphasis on work as part of a group, thinking on your own and formulating your ideas, not just mimicking the teacher's steps. You will have to work hard to be successful, but you will learn a lot along the way. Please keep all of this in mind starting with this assignment. Work hard and work together with a friend!

The pace of the course is swift. Our main goal is to ensure that you are ready and able to take on AP Calculus next year. We plan to hit the ground running and you should too – you WILL get left behind if you don't. If you need it, take advantage of summer tutoring or working with a friend. This help could be very valuable to getting the year going positively as we plan to spend very little time reviewing this work.

Have a great summer! We look forward to seeing you in September!

Mr. Turner

YOUR SUMMER ASSIGNMENT CONSISTS OF THE FOLLOWING:

- Get or print the summer work packet and complete it. (This is it!)
- **Make sure your Google Classroom notifications are turned on.**
- Get a 3-ring binder (2 inch recommended) and loose leaf notebook & graph paper.
- Complete this packet. **You must use other paper.** This will be checked on day 1.

Honors Pre-Calculus Algebra Review: Transformations of Parent Graphs

***If you do not have the "Parent Graph Toolkit" that you created in Algebra 2, then use the attached toolkit (last page) to create a new one.

You should be able to write equations, graph, and describe the transformations for parent functions before entering Honors Pre-Calculus. Use the examples below to help.

Ex 1: Describe the transformation of $y = x^2$.

$$y = (x - 3)^2 + 5$$

Shift right 3

Shift up 5

Ex 2: Describe the transformation of $y = \frac{1}{x}$.

$$y = -\frac{2}{x+4}$$

Shift left four

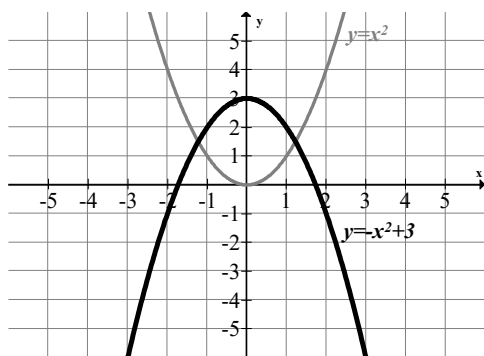
Stretch y -values by a factor of 2

Reflect over the x -axis.

Ex 3: Sketch the graph of $y = -x^2 + 3$.

Reflect over the x -axis

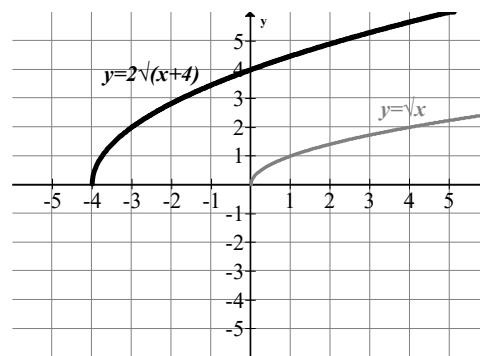
Shift up 3



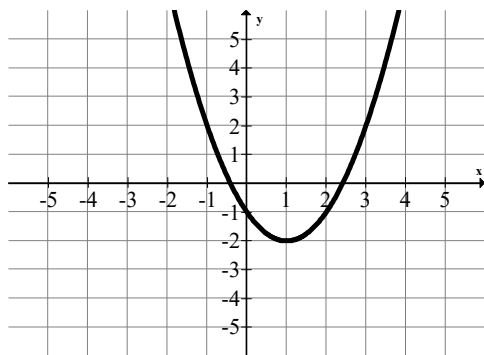
Ex 4: Sketch the graph of $y = 2\sqrt{x+4}$

Shift left 4

Stretch y -values by a factor of 2



Ex 5: Write the equation for the graph.

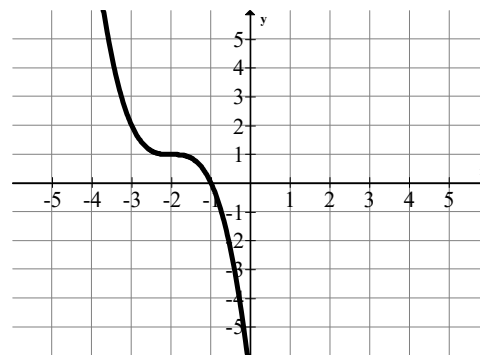


Parent Function: $y = x^2$

Shifted right 1 and down 2

Answer: $y = (x - 1)^2 - 2$

Ex 6: Write the equation for the graph.



Parent Function: $y = x^3$

Reflected over the x -axis

Shifted left 2 and up 1

Answer: $y = -(x + 2)^3 + 1$

Honors Pre-Calculus Algebra Review: Transformations of Parent Graphs Practice

For #1-10, name the parent function and describe the transformations.

1. $y = x^2 - 5$

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

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

4. $y = -\sqrt{x} + 7$

5. $(x - 6)^2 + (y - 8)^2 = 25$

6. $y = \frac{1}{2}(x + 10) + 4$

7. $y = \frac{5}{x} - 6$

8. $y = 2^{x+5} - 11$

9. $y = -\frac{1}{3}|x - 4.5| - 7.5$

10. $y = 3 - 2x^2$

For #11-18, sketch the graph of each relation on a separate piece of graph paper without using your calculator. (5 points must be accurate)

11. $y = (x + 3)^2 + 2$

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

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

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

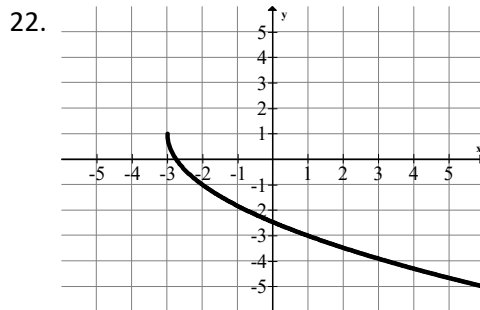
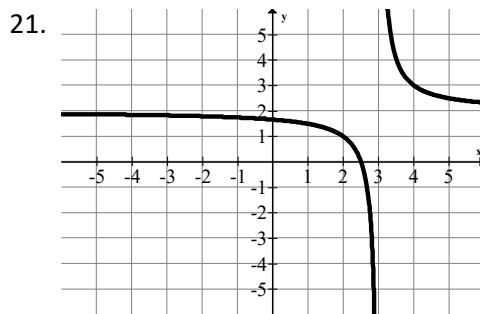
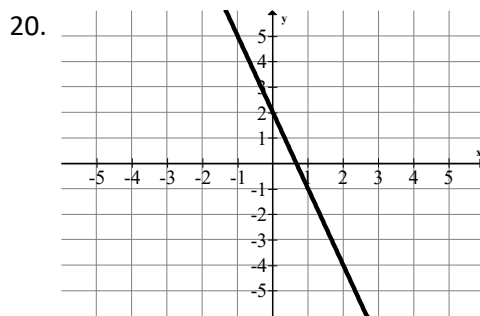
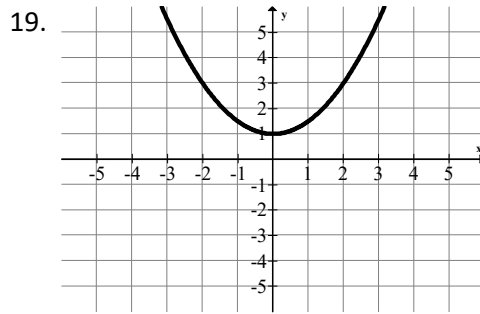
15. $y = -|x + 2|$

16. $y = \frac{1}{x-2} - 1$

17. $x^2 + (y - 3)^2 = 16$

18. $y = -5 + \sqrt{x + 1}$

For #19-20, write the equation for each graph.



Honors Pre-Calculus Algebra Review: Exponents

Examples

You should be able to simplify algebraic expressions using Laws of Exponents before entering Honors Pre-Calc. These laws can also be used to solve exponential equations using like-bases.

Laws of Exponents:

1. $x^a \cdot x^b = x^{a+b}$

2. $\frac{x^a}{x^b} = x^{a-b}$

3. $(x^a)^b = x^{a \cdot b}$

4. $x^0 = 1$

5. $x^{-a} = \frac{1}{x^a}$ and $\frac{1}{x^{-b}} = x^b$

6. $x^{1/a} = \sqrt[a]{x}$

Use the examples below to help.

Ex 1: $x^2 \cdot x^4 = x^6$	Add exponents	Ex 2: $\frac{x^6}{x^2} = x^4$	Subtract exponents
Ex 3: $(x^2)^3 = x^6$	Multiply exponents	Ex 4: $x^{-5} = \frac{1}{x^5}$	Take reciprocal
Ex 5: $x^{\frac{1}{3}} = \sqrt[3]{x}$	Change to root	Ex 6: $(5a^{-2})^2$ $5^2 \cdot (a^{-2})^2$ $25 \cdot a^{-4}$ $\frac{25}{a^4}$	Distribute the exponent Multiply power to a power Take reciprocal of base with negative exponent
Ex 7: $\left(\frac{2}{3}\right)^{-2}$ $\left(\frac{3}{2}\right)^2$ $\left(\frac{3^2}{2^2}\right) = \frac{9}{4}$	Take reciprocal Distribute exponent	Ex 8: $27^{\frac{2}{3}}$ $\left(27^{\frac{1}{3}}\right)^2$ $\sqrt[3]{27^2}$ $3^2 = 9$	Separate exponent Take root first (smaller numbers are easier to compute)
Ex 9: $(2x^{-1})^2(2x^0)$ $\left(\frac{2}{x}\right)^2 (2 \cdot 1)$ $\left(\frac{4}{x^2}\right) (2)$ $\frac{8}{x^2}$	Reciprocal/power of 0 Simplify Multiply	Ex 10: $\frac{2x^4y^{-4}z^{-3}}{6x^2y^{-3}z^4}$ $\frac{2x^2y^{-1}z^{-7}}{6}$ $\frac{2x^2}{6yz^7}$ $\frac{x^2}{3yz^7}$	Subtract exponents Move bases with (-) exponents Reduce coefficients
Ex 11: $6^{-2x} = 6^{2-3x}$ $-2x = 2 - 3x$ $x = 2$	Solve for x . When bases are the same, set exponents equal. Solve for x .	Ex 12: $16^{2x-3} \cdot 4^{-2x} = 2^4$ $(2^4)^{2x-3} \cdot (2^2)^{-2x} = 2^4$ $2^{4(2x-3)} \cdot 2^{2(-2x)} = 2^4$ $2^{8x-12} \cdot 2^{-4x} = 2^4$ $2^{8x-12+(-4x)} = 2^4$ $2^{4x-12} = 2^4$	Solve for x . Rewrite with like-bases Simplify using laws. $4x - 12 = 4$ $x = \frac{16}{4} = 4$

Honors Pre-Calculus Algebra Review: Exponents Practice

Simplify the following expressions.

1. $(m^{-1}n^{-2})^3$

2. $(2^{-5})^4$

3. $81^{\frac{3}{4}}$

4. $ba^4(2ba^4)^{-3}$

5. $\frac{2y^3 \cdot 3xy^3}{3x^2y^4}$

6. $\frac{2x^3}{(x^{-1})^3}$

7. $(2x^0y^2)^{-3} \cdot 2yx^3 \cdot 125^{\frac{4}{3}}$

8. $\frac{3x^2y^2}{2x^{-1} \cdot 4yx^2}$

9. $\frac{(2hj^2k^{-2} \cdot h^4j^{-1}k^4)^0}{2h^{-3}j^{-4}k^{-2}}$

10. $\frac{(2x)^{-4}}{x^{-1} \cdot x}$

Solve for x .

11. $5^x = 25^3$

12. $4^{x+1} = \frac{1}{64}$

13. $5^{3x} = 5^{7x-2}$

14. $2^x = 8^{x+5}$

15. $243^{x+2} \cdot 9^{2x-1} = 9$

16. $\left(\frac{1}{6}\right)^{3x+2} \cdot 216^{3x} = \frac{1}{216}$

17. $\frac{81^{3x+2}}{243^{-x}} = 3^4$

18. $81 \cdot 9^{-2x-2} = 27$

Honors Pre-Calculus Algebra Review: Factoring Examples

You should be able to factor algebraic expressions before entering Honors Pre-Calc. Factoring can also be used in conjunction with the Zero Product Property to solve equations as well. Use the examples below to help.

Ex 1: $3x^3 + 9x$ $3x(x^2 + 3)$	Factor out the GCF	Ex 2: $2x^3y^2 - 8x^2y^4$ $2x^2y^2(x - 4y^2)$	Factor out the GCF
Ex 3: $9x^2 - 16 = 0$ $(3x + 4)(3x - 4)$	<i>Difference of Squares</i> Both $9x^2$ and 16 are perfect squares. They factor into the square of the first value $\pm$ the square of the second value.	Ex 4: $x^2 - 3x - 10$ $(x + 2)(x - 5)$	<i>Guess & Check</i> – when leading coefficient is 1. Need 2 numbers that add to -3 and multiply to -10
Ex 5: $6x^2 + 5x - 4$ 1, 2, 3, 6 1, 2, 4 $(3x + 4)(2x - 1)$	<i>Guess & Check</i> Factors of 6. Factors of 4 Guess and Check (foil) combinations of the factors.	Ex 6: $6x^3 + 21x^2 - 12x$ $3x(2x^2 + 7x - 4)$ 1, 2 1, 2, 4 $3x(2x - 1)(x + 4)$	Factor out the GCF <i>Guess and Check</i> Factors of 2 Factors of 4 Guess and Check combinations
Ex 7: $2(3x - 7)^2 + (x + 2)(3x - 7)$ Factor out GCF $(3x - 7)(2(3x - 7) + (x + 2))$ Distribute the 2 $(3x - 7)(6x - 14 + x + 2)$ Combine like terms $(3x - 7)(7x - 16)$		Ex 8: $x^3 + 2x^2 + 8x + 16$ $(x^3 + 2x^2) + (8x + 16)$ $x^2(x + 2) + 8(x + 2)$ $(x + 2)(x^2 + 8)$	No common term, not a trinomial Group as shown Factor GCF out of both groups Factor out GCF $(x + 2)$

The Factoring Checklist

GCF: Always look for a GCF first. The coefficients and exponents will be easier to work with.

DOS: Look for Difference of Squares next. The pattern is the simplest factoring pattern.

Trial & Error/Guess & Check/un-FOIL/Square – Diamond: Use your preferred term.

Honors Pre-Calculus Algebra Review: Factoring Practice

Factor the following expressions completely.

1. $x^2 + 8x$

2. $6x^2 + 48x$

3. $3x^2y^5 - 9xy^3$

4. $m(x + y) + (x + y)^2$

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

6. $x^2 - 7x + 12$

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

8. $x^4 + 14x^2 + 45$

9. $2x^2 - 13x + 20$

10. $5x^2 + 29x + 20$

11. $4x^3 + 4x^2 - 15x$

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

13. $4x^2 - 36$

14. $18x^3 - 50x$

15. $xy + 7x + 4y + 28$

16. $x^3 - 3x^2 + 9x - 27$

17. $2x^4 + x^2 - 6$

18. $x^6 - 81$

19. $x^7y + 2x^4y - 15xy$

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

Honors Pre-Calculus Algebra Review: Algebraic Fractions Examples

Algebraic fractions follow the same rules as regular numeric fractions. At times factoring will be required.

- Always simplify/reduce as much as possible.
- Never leave fractions complex (fraction inside another fraction).
- A common denominator is required for addition and subtraction, NOT multiplication or division.
- Canceling out is division. Division works well with multiplication and division because they co-exist in the Order of Operations. Do not cancel things that are being added or subtracted because you will violate the Order of Operations and commit the sin of ***BAD ALGEBRA***.

Ex 1: $\frac{x}{2} + \frac{3}{x}$ LCD: $2x$

$$\frac{x^2}{2x} + \frac{6}{2x}$$

$$\frac{x^2+6}{2x}$$

Ex 2: $\frac{3}{x^2-y^2} + \frac{x}{2x+2y}$ Factor

$$\frac{3}{(x+y)(x-y)} + \frac{x}{2(x+y)} \quad \text{LCD: } 2(x+y)(x-y)$$

$$\frac{3 \cdot 2 + (x(x-y))}{2(x+y)(x-y)} = \frac{6+x^2-xy}{2(x+y)(x-y)}$$

Ex 3: $\frac{2}{x-2} - \frac{1}{x+1}$ LCD: $(x-2)(x+1)$

$$\frac{2(x+1)}{(x-2)(x+1)} - \frac{1(x-2)}{(x-2)(x+1)}$$

$$\frac{2x+2-x+2}{(x-2)(x+1)}$$

$$\frac{x+4}{(x-2)(x+1)}$$

Ex 4: $\frac{x+2}{2x-4} - \frac{x+2}{x^2-2x}$ Factor

$$\frac{x+2}{2(x-2)} - \frac{x+2}{x(x-2)} \quad \text{LCD: } 2x(x-2)$$

$$\frac{x(x+2)}{2x(x-2)} - \frac{2(x+2)}{2x(x-2)}$$

$$\frac{x^2+2x-2x-4}{2x(x-2)}$$

$$\frac{x^2-4}{2x(x-2)} = \frac{(x+2)(x-2)}{2x(x-2)} = \frac{x+2}{2x}$$

Ex 5: $\frac{x^2+x-6}{x-5} \cdot \frac{5x-25}{x^2+4x+3}$ Factor

$$\frac{(x+3)(x-2)}{x-5} \cdot \frac{5(x-5)}{(x+3)(x+1)} \quad \text{Cancel}$$

$$\frac{5(x-2)}{x+1}$$

Ex 6: $\frac{2-x}{x^2+2x+1} \div \frac{x^2+3x-10}{x^2-1}$ Invert & Multiply

$$\frac{2-x}{(x+1)^2} \cdot \frac{(x+1)(x-1)}{(x+5)(x-2)} \quad \text{Cancel; note the negative}$$

$$\frac{-1(x-1)}{(x+1)(x+5)}$$

Ex 7: $\frac{x}{\frac{1}{x} + \frac{1}{y}}$ LCD: xy

$$\frac{x}{\frac{1}{x} + \frac{1}{y}} \cdot \frac{xy}{xy} \quad \text{Mult by 1}$$

$$\frac{x^2y}{y+x}$$

Ex 8: $\frac{x + \frac{1}{2}}{\frac{1}{x} + 2}$ LCD: $2x$

$$\frac{x + \frac{1}{2}}{\frac{1}{x} + 2} \cdot \frac{2x}{2x} \quad \text{Mult by 1}$$

$$\frac{2x^2+x}{2+4x} = \frac{x(2x+1)}{2(1+2x)}$$

Honors Pre-Calculus Algebra Review: Algebraic Fractions Practice

Perform the indicated operations and/or simplify as much as possible. Put your work and answers on other paper. Be neat and organized.

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

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

3. $\frac{10x-2y}{y-5x}$

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

5. $\frac{8x}{x^2+4x-21} + \frac{3}{x+7}$

6. $\frac{7x-1}{2x+3} + 4$

7. $\frac{7}{x^2+3x-18} - \frac{1}{x^2-36}$

8. $\frac{2}{2x-2} - \frac{x}{x^2-2x+1}$

9. $\frac{3x-4}{x+5} - 2$

10. $\frac{2x^4}{10y^{-2}} \cdot \frac{5y^3}{4x^3}$

11. $\frac{2x+12}{3x-9} \cdot \frac{6-2x}{3x+18}$

12. $\frac{x^2-5x+6}{x^2-4} \cdot \frac{x^2+3x+2}{x^2-2x-3}$

13. $\frac{3x^3}{5y^2} \div \frac{6y^{-3}}{5x^{-5}}$

14. $\frac{3y-12}{2y+4} \div \frac{6y-24}{8+4y}$

15. $\frac{x^2}{x^2-16x+63} \div \frac{3x}{x^2-x-42}$

16. $\frac{\frac{1}{2}}{\frac{7}{8}}$

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

18. $\frac{1-\frac{1}{4}}{2-\frac{3}{5}}$

19. $\frac{\frac{2}{x+y}}{3}$

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

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

22. $\frac{x+y}{\frac{1}{x}+\frac{1}{y}}$

23. $\frac{\frac{1}{2}-\frac{1}{x}}{x-2}$

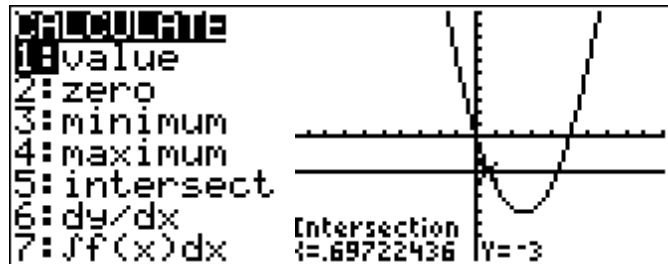
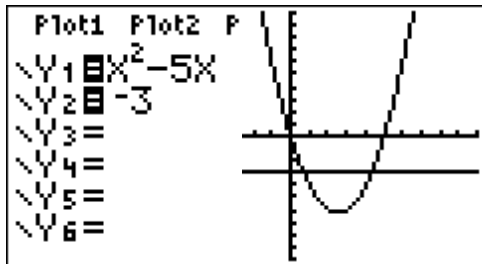
24. $\frac{\frac{1}{x}-\frac{1}{3}}{2x-6}$

Honors Pre-Calculus Algebra Review: Solving Equations Examples

You should be able to solve using algebraic techniques like factoring and using graphical techniques on your calculator. Use the examples below to help.

Ex 1: $\frac{x}{3} + \frac{3x}{4} = 12$ mult. by 12 (LCD) $4x + 9x = 144$ $13x = 144$ $x = \frac{144}{13}$	Ex 2: $3x^2 - 27x = 0$ common factor $3x(x - 9) = 0$ use zero-product property $3x = 0; x - 9 = 0$ $x = 0, 9$
Ex 3: $4x^2 - 16 = 0$ common factor $4(x^2 - 4) = 0$ diff. of squares $4(x + 2)(x - 2) = 0$ $x = 2, -2$	Ex 4: $4x^2 - 16 = 0$ add & divide $x^2 = 4$ take square root $x = \pm\sqrt{4}$ Don't forget the $\pm$ $x = \pm 2$
Ex 5: $3x^3 - 3x^2 = 18x$ set = 0 $3x^3 - 3x^2 - 18x = 0$ common factor $3x(x^2 - x - 6) = 0$ trial & error $3x(x - 3)(x + 2) = 0$ $x = 0, 3, -2$	Ex 6: $\sqrt{2x + 7} - x = 2$ solve for radical $\sqrt{2x + 7} = x + 2$ square both sides $2x + 7 = x^2 + 4x + 4$ set = 0 $x^2 + 2x - 3 = 0$ $(x + 3)(x - 1) = 0$ $x = -3, 1$ Eliminate $x = -3$ (won't check).
Ex 7: $2(x + 1)^{2/3} - 1 = 7$ add & divide $(x + 1)^{2/3} = 4$ square root $(x + 1)^{1/3} = \pm 2$ cube $x + 1 = \pm 8$ $x = 7, -9$	Ex 8: $x^4 - 3x^2 + 2 = 0$ quadratic type (exponents $(x^2 - 2)(x^2 - 1) = 0$ in $2 - 1 - 0$ ratio) $x^2 = 2$ $x^2 = 1$ take square roots $x = \pm\sqrt{2}, \pm 1$

- Ex 9:** Solve $x^2 - 5x = -3$ by finding intersection points on your calculator.
- Step 1: Input $y1 = x^2 - 5x$ and $y2 = -3$
- Step 2: Graph in a window that allows you to see both intersections.
- Step 3: Press [2nd] [TRACE] to access the Calculate menu. Choose 5: Intersect
- Step 4: The cursor should be on Y1 (aka the First curve). Press [ENTER].
- Step 5: The cursor should be on Y2 (aka the Second curve). Press [ENTER].
- Step 6: Make your guess by moving the cursor closer to the left intersection. Press [ENTER].
- Step 7: Record the x-value as one solution.
- Step 8: Repeat steps 3 through 7 for the other point of intersection **but change** your guess.



Honors Pre-Calculus Algebra Review: Solving Equations Practice

Solve these equations on other paper using by-hand (non-calculator) techniques.

1. $\frac{5x}{4} + \frac{1}{2} = x - \frac{1}{2}$

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

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

4. $x^3 - 9x^2 + 18x = 0$

5. $25(x-3) = 12(x+2) - 10$

6. $2x^2 = x^4 - 2x^2$

7. $6x^2 - 3x = 0$

8. $9x^2 = 25$

9. $3 + 5x - 2x^2 = 0$

10. $2x^2 = 19x + 33$

11. $9x^2 - 1 = 0$

12. $(x+3)^{2/3} = 81$

13. $4x^4 = 18x^2$

14. $20x^3 - 125x = 0$

15. $x^4 - 81 = 0$

16. $5x^3 + 30x^2 + 45x = 0$

17. $x^4 = 13x^2 - 36$

18. $(x+2)^2 - 10(x+2) + 9 = 0$

19. $2x + 9\sqrt{x} - 5 = 0$

20. $\frac{20-x}{x} = x$

Solve these equations on a calculator to find intersections.

21. $x^4 = 2x^3 + 1$

22. $2x^3 - x^2 - 18x + 9 = 0$

23. $|x-3| = 4$

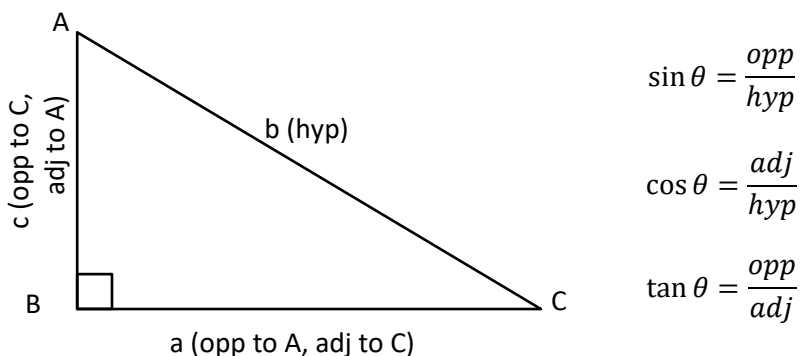
24. $x^2 + 8x - 4 = 0$

25. $|x-10| = x^2 - 10x$

Honors Pre-Calculus Algebra Review: Right Triangle Trig Examples

You should be able to solve right triangles using trigonometry. Recall that “solving” means to find all side measurements and all angle measurements. Also recall that angles are named with capital letters while the side opposite the angle is named with the corresponding lower case letter. Use the examples below to help.

Generic SOH-CAH-TOA



Ex 1: If $A = 25^\circ$, $b = 7$
 $C = 65^\circ$ (by subtraction)
 $\sin 25^\circ = \frac{a}{7} \rightarrow a = 2.96$
 $\cos 25^\circ = \frac{c}{7} \rightarrow c = 6.34$

Ex 2: If $a = 5$, $c = 6$
 $b = \sqrt{5^2 + 6^2} = \sqrt{61}$ (Pythag. Th.)
 $\tan A = \frac{5}{6} \rightarrow A = \tan^{-1} \frac{5}{6} = 39.8^\circ$
 $\tan C = \frac{6}{5} \rightarrow C = \tan^{-1} \frac{6}{5} = 50.2^\circ$

Special Right Triangles

You should recall that there are two special right triangles from geometry. These right triangles are so special we will continue to use them this year as well. **Make sure you are familiar with their special patterns.**

MATH NOTES

Special Right Triangles

It's important to know certain right triangle combinations in order to solve common problems quickly. The two you need to know are the 45° - 45° - 90° and the 30° - 60° - 90° .

45° - 45° - 90°

The ratio of the sides in a 45° - 45° - 90° triangle is
 $1:1:\sqrt{2}$ or $n:n:n\sqrt{2}$



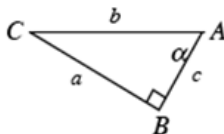
30° - 60° - 90°

The ratio of the sides in a 30° - 60° - 90° triangle is
 $1:\sqrt{3}:2$ or $n:n\sqrt{3}:2n$

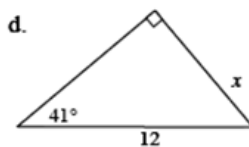
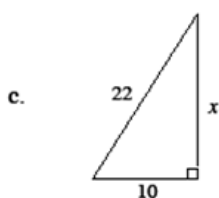
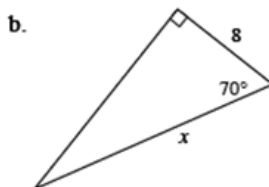
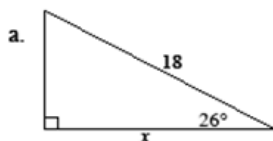
Honors Pre-Calculus Algebra Review: Right Triangle Trig Practice

1. For $\triangle ABC$ at the right, name the ratio in terms of the sides.

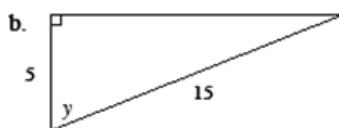
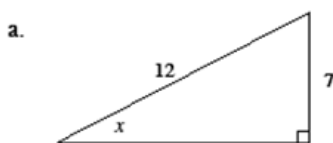
- a. $\sin \alpha = ?$
- b. $\cos \alpha = ?$
- c. $\tan \alpha = ?$



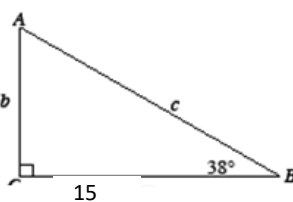
2. Solve for x in each triangle below:



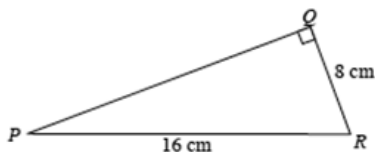
3. Use the idea of an inverse to find the missing angles in each triangle.



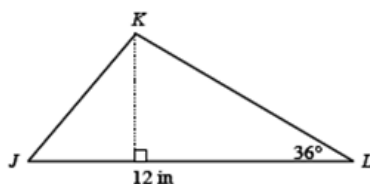
4. To solve a triangle, you need to find all of the missing sides and angles.
Solve $\triangle ABC$ shown at right.
(Find $\angle A$, side b , and side c .)



5. Solve $\triangle PQR$ to the right.



6. The area of $\triangle JKL$ is 30 in^2 .
The length of side JL is 12 in .
Find the length of side KL .

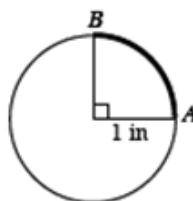


Honors Pre-Calculus Algebra Review: Other Practice

1. Megan went walking for 2 hours and walked at a steady pace of 3 mph.
 - a. How far did she walk?
 - b. Make a very careful graph of the situation with the horizontal axis measured in hours and the vertical axis measured in miles per hour. You should get a rectangle between the graph and the x-axis.
 - c. Divide the rectangle you get into 6 smaller rectangles by drawing vertical lines at the 1 and 2 hour marks and horizontal lines at the 1 and 2 mph marks.
 - d. Explain why each smaller rectangle created in part c represents a distance of 1 mile that Megan walked. Hint: consider the units of measure.
2. Allison drove for a total of two hours. She drove 50 mph for the first 90 minutes and then drove 75 mph for the last 30 minutes. (Assume the change in speed happened in the blink of an eye.)
 - a. How far did she travel?
 - b. Sketch a graph like you did in number 1 and shade the area in the first quadrant that is under this graph. Describe the shape or shapes of the shaded region.
 - c. What is the area of the shaded region? What units are used for this area and why?
3. Burton travels on cruise control at 50 mph from 2 PM until 5 PM.
 - a. How far does he travel?
 - b. Sketch a graph like you did in number 1 and shade the area in the first quadrant that is under this graph. Describe the shape or shapes of the shaded region.
 - c. Explain why the shaded area represents a distance of 150 miles.
4. Let $A = (3, 3)$ & $B = (15, 12)$.
 - a. Find the length of $\overline{AB}$.
 - b. Find the midpoint of $\overline{AB}$.

5.

The circle to the right has a radius of one inch.
Using exact values, what is the length of **$\overline{AB}$**
(shown in bold)? You will have π as part of
your answer.



Parent Graphs Toolkit (optional)

Parabola/Quadratic

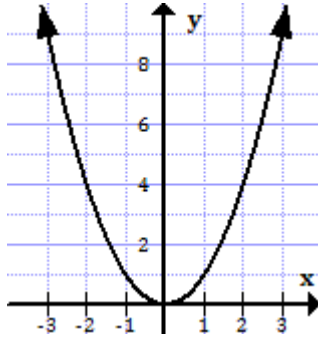
Equation: _____

Domain: _____

Range: _____

Symmetry: _____

Pattern: Over 1, _____
Over 2, _____



Cubic

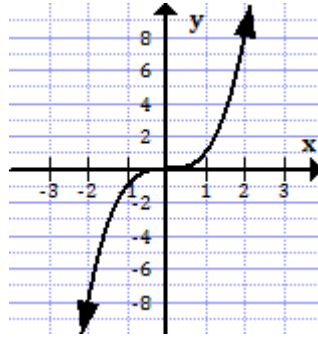
Equation: _____

Domain: _____

Range: _____

Symmetry: _____

Pattern: Over 1, _____
Over 2, _____



Absolute Value

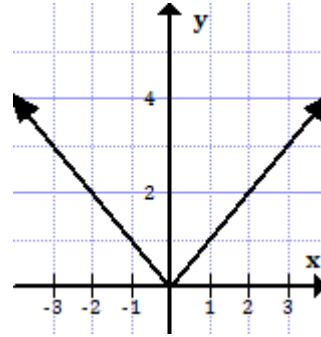
Equation: _____

Domain: _____

Range: _____

Symmetry: _____

Pattern: Over 1, _____
Over 2, _____



Radical/Square Root

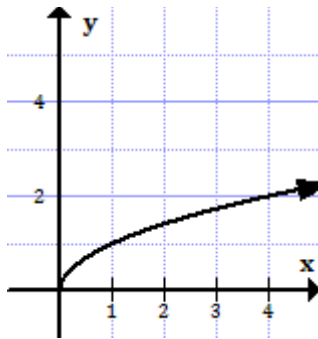
Equation: _____

Domain: _____

Range: _____

Symmetry: _____

Pattern: Over 1, _____
Over 2, _____



Hyperbola/Reciprocal

Equation: _____

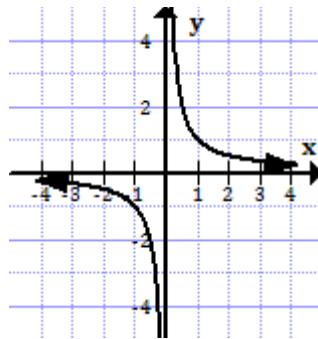
Domain: _____

Range: _____

Symmetry: _____

Horz. Asy: _____

Vert/ Asy: _____



Exponential

Equation: _____

Domain: _____

Range: _____

Symmetry: _____

Horz. Asy: _____

y-int: _____

