Trigonometry Pre-Requisite Skills Packet

For all students enrolled in Trigonometry for the 2023-2024 school year.

Please complete this packet and bring it with you on the first day of school. This summer assignment is not *required*, but it is *strongly recommended!* It will give you the opportunity to self-assess how prepared you are for Trigonometry this year. The first unit we will work on in the fall requires that you already know most of the topics in this packet, so put your best effort into it, use old notes and online resources as needed, and ensure that you understand the content!

Try to complete the problems without a calculator first! This will set you up for success next year for the work that we do in Trigonometry. You will be able to use a calculator in class (so you can use the calculator here), but practicing without one will help you strengthen your basic skills.

The Herndon High School website will also post FCPS recommended activities for each level of mathematics. Both resources will help you prepare for next year.

Have a great summer – We are looking forward to meeting you in August!

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Online Resources:

Mathspace
www.mathspace.co
Select login with Clever and use your FCPS ID number and password.

Khan Academy
www.khanacademy.org

HippoCampus
http://www.hippocampus.org
Great video lessons! Click on Algebra from the left "Subject" box and then select either Algebra 1A or 1B. Scroll down to find the topic you need. There are also many resources here in Spanish.

Arithmetic Review

Evaluate **without a calculator**. Put answers in simplest form.

1. $\dfrac{3}{16}+\dfrac{1}{8}$

2. $\dfrac{5}{8}-\dfrac{5}{12}+\dfrac{1}{6}$

3. $\dfrac{4}{5}\cdot\dfrac{1}{2}\cdot\dfrac{3}{4}$

4. $\dfrac{27-35}{4}$

5. $3\left(\dfrac{-5}{12}+\dfrac{3}{8}\right)$

6. $\dfrac{\frac{1}{5}(-8-9)}{\frac{-1}{3}}$

7. $\left(\dfrac{3}{5}\div3\right)-\left(6\cdot\dfrac{4}{8}\right)$

8. $\dfrac{81-(90-9)}{5}$

9. $\dfrac{2}{3}\div8$

10. $5^{-1}+2^{-3}$

11. $\left(\dfrac{3}{2}\right)^{-2}-2^{2}$

12. $-3+\dfrac{3}{7}$

Graphing Review

Graph each equation **without using a calculator**.
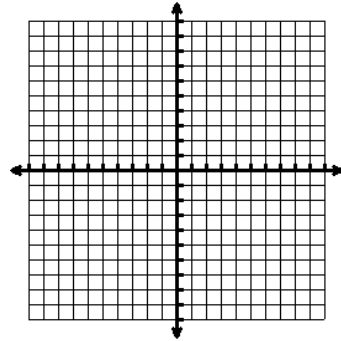
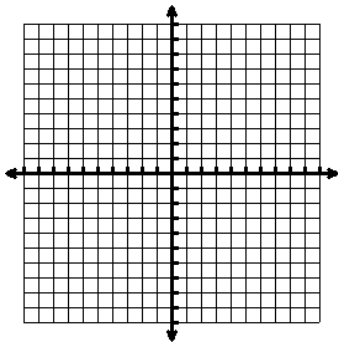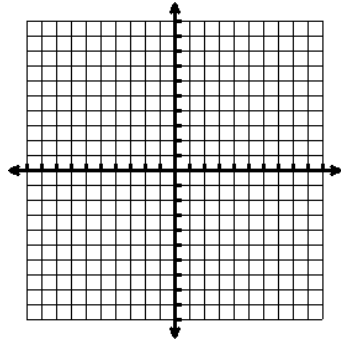1. $y = 3$
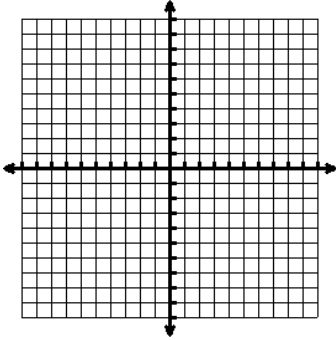
2. $x = -4$
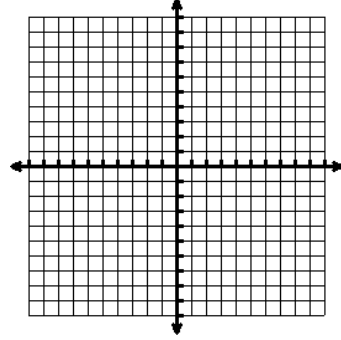
3. $y = -3x + 2$
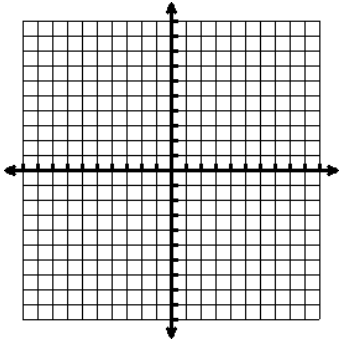
4. $x - 2y = 6$

5. $y = x^2$

| |

6. $y = x$

Describe the transformations in the graphs from the parent function $f(x) = x^2$ **without using a calculator**. Remember $f(x) = A(x-h)^2 + k$ from Algebra 2.

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

8. $h(x) = 2(x-1)^2 + 6$

Domain & Range Review

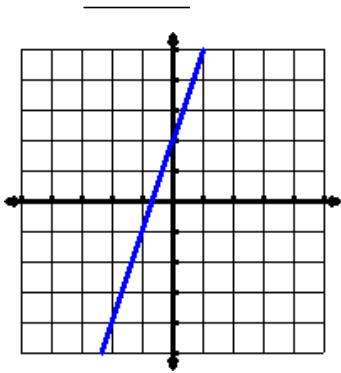_Domain_: The possible x-values of a function   _Range_: The possible y-values of a function

Give the domain and range of the following in <mark>interval notation</mark>.
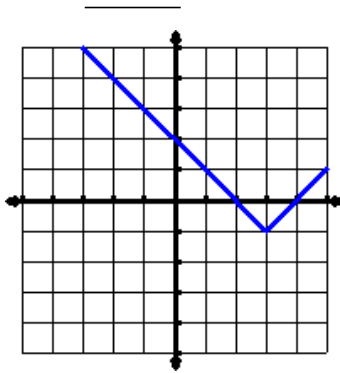
Example 1:
Domain: (−∞, ∞)

Range: (−∞, ∞)

Example 2:
Domain: (−∞, ∞)

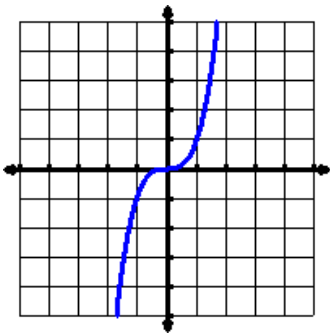Range: [−1, ∞)

Remember for Interval Notation:
- Always start with the smaller number and go to the bigger number.
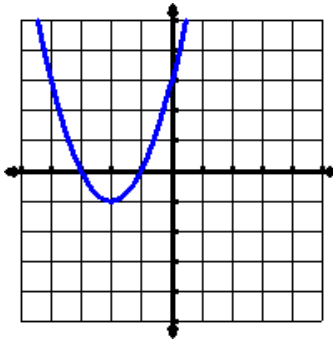
  For example: $(-2,5)$ ☺,

  not $(5,-2)$ ☹.
- A [or] means the value is included, like ≤, ≥, or a closed point. A (or) means the value is <u>not</u> included like <, >, or an open point.
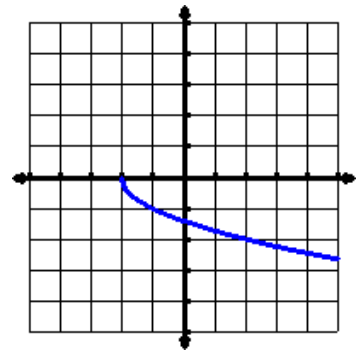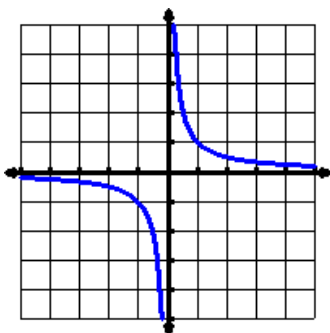
1. D: _____
   R: _____
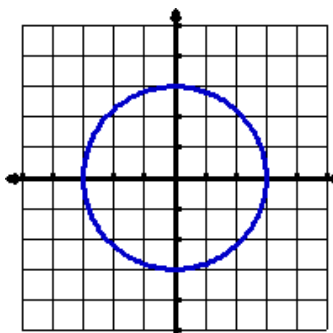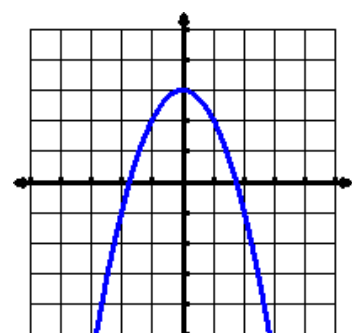
2. D: _____
   R: _____

3. D: _____
   R: _____

4. D: _____
   R: _____

5. D: _____
   R: _____

6. D: _____
   R: _____

Radical Operations Review

Simplify each radical expression.

1. $\sqrt{18}$ 2. $\sqrt{32}$

3. $2\sqrt{24}$ 4. $3\sqrt{75}$

Multiply each radical expression. Write answers in simplified form.

5. $\sqrt{6} \cdot \sqrt{3}$ 6. $2\sqrt{12} \cdot \sqrt{3}$

7. $\sqrt{2} \cdot 3\sqrt{20}$ 8. $2\sqrt{2} \cdot 3\sqrt{14}$

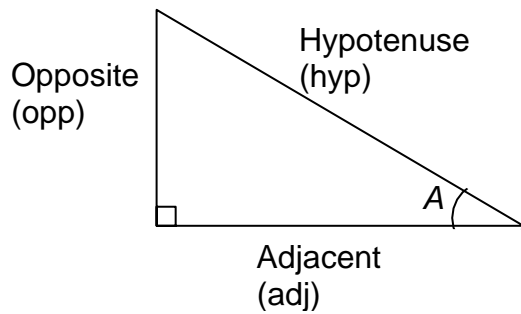Rationalize the denominator of each rational expression.

9. $\dfrac{4}{\sqrt{3}}$ 10. $\dfrac{7}{\sqrt{2}}$ 11. $\dfrac{8}{\sqrt{2}}$ 12. $\dfrac{6\sqrt{5}}{\sqrt{18}}$

Basic Trigonometry Review: SOH-CAH-TOA

Opposite
(opp)

Hypotenuse
(hyp)

A

Adjacent
(adj)

$$\sin A = \frac{opp}{hyp}$$

$$\cos A = \frac{adj}{hyp}$$
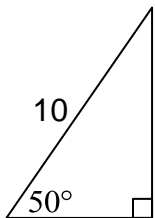
$$\tan A = \frac{opp}{adj}$$

Find the length of the two missing sides of the triangle. Show all work. You **MAY** use a calculator for these problems. If you don't have a calculator at home, use Desmos: https://www.desmos.com/testing/virginia/graphing.
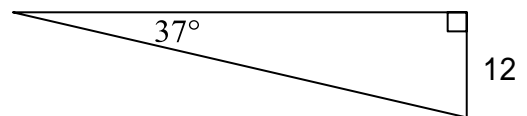Don't forget to put your calculator in degree mode! Round to 3 decimal places.

1.

10

50°

2.

37°

12

3.

5.1

68°

4.

4.2

33°