

## Math Course 3 Review

### ***How At Home Learning will work:***

Check Google Classroom regularly for scheduled review to be posted every few days. The review is meant for you to continue to practice your skills and stay up-to-date as much as possible.

The work you complete will count for **positive credit only**, this means it cannot hurt your overall grade if you are unable to complete it. Submit your work through Google Classroom as you finish by taking pictures of your paper and posting it to the appropriate assignment.

If you have questions, please post those questions to Google Classroom. We also strongly encourage you to seek out other students to form study groups via Google Meet, Zoom, etc. for additional support. We will be checking our Google Classrooms regularly to answer any questions that you may have. You may also email us directly. Attached is a guideline for appropriate interaction when communicating with other students and staff through technology.

Sincerely,

OHS Math

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## ***Remote Learning Guidelines***

Dear students,

As we move to learning remotely it is important to remind ourselves that our reason for being together as a class and school is to support each others' learning. As such, our interactions online, like our interactions in person, are opportunities to present our best selves.

Before writing or posting anything online make certain what you write or post contributes to our learning. It should be on topic. It should not distract. Humor should only be used when it helps learning and engagement. If you are unsure whether you should write or post something in a public forum (google classroom, shared doc, group email thread, social media, etc.) check with a trusted adult (such as a parent or teacher) first.

Jefferson Union High School District has a detailed technology use policy, but if you always check that what you are doing...

...is on topic,

...is respectful,

...and motivated by an interest in learning and helping others learn,

you will likely never violate that policy and face consequences.

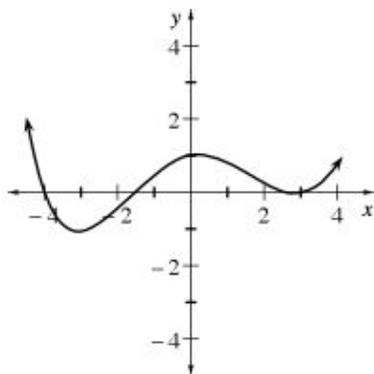
Remember, when we interact face-to-face we are able to read physical cues that provide additional meaning and context to what we are saying and doing. Face-to-face interactions allow for clarification and forgiveness. Online actions and statements do not reliably do this. Things you write and post online may not be interpreted as intended, they exist indefinitely, and can be taken out of context. Please be mindful, and pause to consider if misunderstanding is possible before you hit send/post/enter.

## Parent Graph Transformations

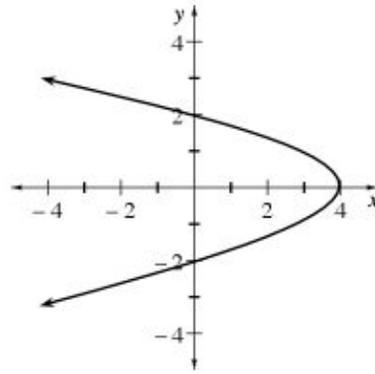
1.  $y = (x - 5)^2$
2.  $y = -\frac{1}{3}(x + 4)^2 + 7$
3.  $(x - 2)^2 + (y + 1)^2 = 9$
4.  $y = |x + 5| - 2$
5.  $y = \frac{1}{x+1} + 10$
6.  $y = 2^x - 8$
7.  $y = -(x - 2)^3 + 1$
8.  $y = \sqrt{x+7}$
9.  $y = 3|x - 5|$
10.  $x = y^2 + 9$

For each of the following problems, state whether or not it is a function. If it is not a function, explain why not.

11.



12.



13.  $y = 7 \pm \sqrt{9 - x^2}$

14.  $y = 3(x - 4)^2$

Write each of the following equations in graphing form. Then state the vertex of the parabola.

1.  $f(x) = x^2 - 8x + 18$
2.  $f(x) = -x^2 - 2x - 7$
3.  $f(x) = 3x^2 - 24x + 42$
4.  $f(x) = 2x^2 - 6$
5.  $f(x) = \frac{1}{2}x^2 - 3x + \frac{1}{2}$
6.  $f(x) = x^2 + 18x + 97$

Identify the center and radius of each circle.

7.  $(x + 2)^2 + (y + 7)^2 = 25$
8.  $3(x - 9)^2 + 3(y + 1)^2 = 12$
9.  $x^2 + 6x + y^2 = 91$
10.  $x^2 - 10x + y^2 + 14y = -58$
11.  $x^2 + 50x + y^2 - 2y = -602$
12.  $x^2 + y^2 - 8x - 16y = 496$

## Polynomial Functions

### Problems

State whether or not each of the following functions is a polynomial function. If it is, give the degree. If it is not, explain why not.

1.  $y = \frac{1}{8}x^7 + 4.23x^6 - x^4 - \pi x^2 + \sqrt{2}x - 0.1$

2.  $f(x) = 45x^3 - 0.75x^2 - \frac{3}{100}x + \frac{5}{x} + 15$

3.  $y = x(x+2)\left(6 + \frac{1}{x}\right)$

Sketch the graph of each of the following polynomial functions.

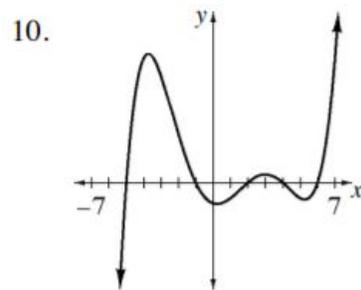
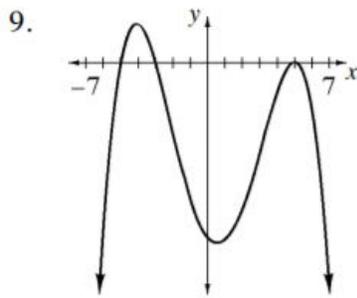
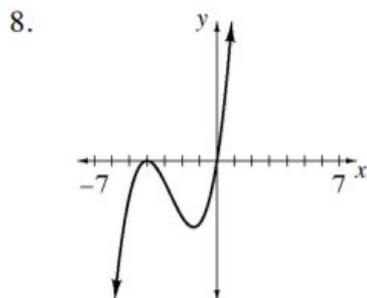
4.  $y = (x + 5)(x - 1)^2(x - 7)$

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

6.  $f(x) = -x(x + 8)(x + 1)$

7.  $y = x(x + 4)(x^2 - 1)(x - 4)$

Below are the complete graphs of some polynomial functions. Based on the shape and location of the graph, describe all the roots of the polynomial function and state its minimum degree. Be sure to include information such as whether or not a root is a double or triple root.

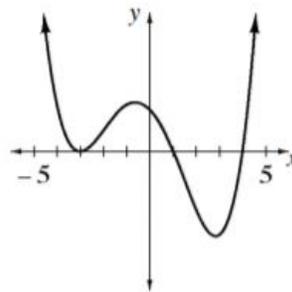
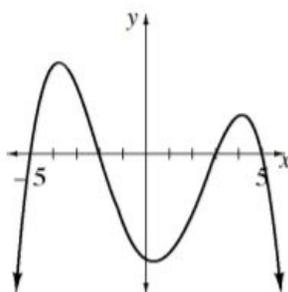
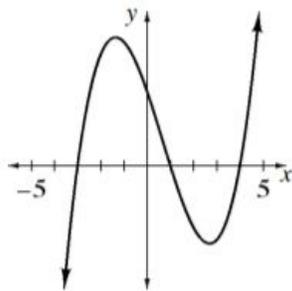


Using the graphs below and the given information, write the specific equation for each polynomial function.

11. y-intercept: (0, 12)

12. y-intercept: (0, -15)

13. y-intercept: (0, 3)



## Simplifying Rational Exponents

Simplify.

1)  $(n^4)^{\frac{3}{2}}$

2)  $(27p^6)^{\frac{5}{3}}$

3)  $(25b^6)^{-1.5}$

4)  $(64m^4)^{\frac{3}{2}}$

5)  $(a^8)^{\frac{3}{2}}$

6)  $(9r^4)^{0.5}$

7)  $(81x^{12})^{1.25}$

8)  $(216r^9)^{\frac{1}{3}}$

**Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.**

9)  $2m^2 \cdot 4m^{\frac{3}{2}} \cdot 4m^{-2}$

10)  $3b^{\frac{1}{2}} \cdot b^{\frac{4}{3}}$

11)  $\left(p^{\frac{3}{2}}\right)^{-2}$

12)  $\left(a^{\frac{1}{2}}\right)^{\frac{3}{2}}$

## Trigonometry

Graph each of the following trigonometric functions.

1.  $y = \sin(\theta)$

2.  $y = \cos(\theta)$

3.  $y = \tan(\theta)$

Determine each of the following values by using what you know about right triangle trigonometry, the unit circle, and special right triangles.

4.  $\cos(180^\circ)$

5.  $\sin(360^\circ)$

6.  $\tan(45^\circ)$

7.  $\cos(-90^\circ)$

8.  $\sin(150^\circ)$

9.  $\tan(240^\circ)$

Convert each of the angle measures.

10.  $60^\circ$  to radians

11.  $170^\circ$  to radians

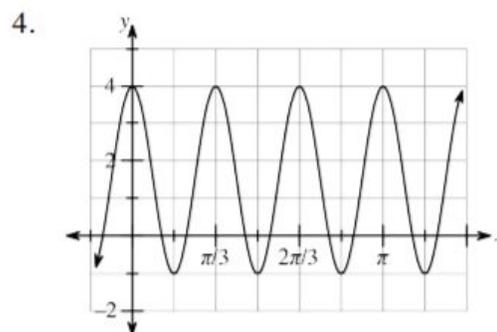
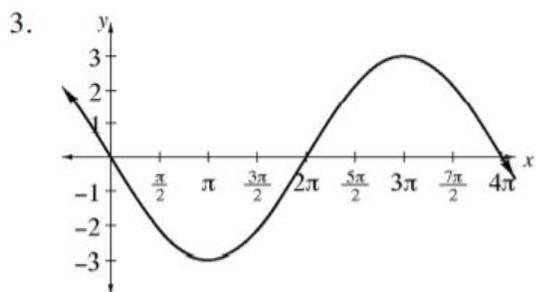
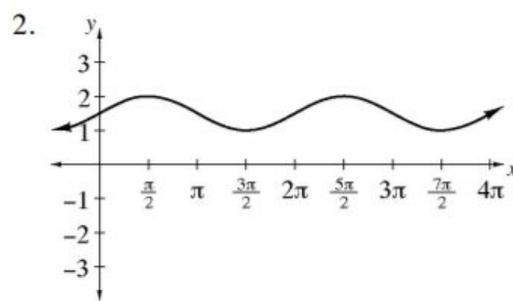
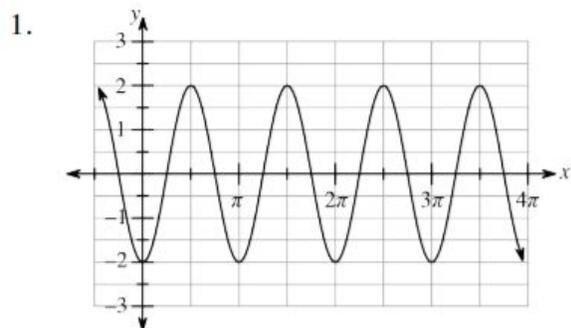
12.  $315^\circ$  to radians

13.  $\frac{\pi}{15}$  radians to degrees

14.  $\frac{13\pi}{8}$  radians to degrees

15.  $-\frac{3\pi}{4}$  radians to degrees

State the amplitude and period of each function graphed below.



5.  $y = 2\cos(3x) + 7$

6.  $y = \frac{1}{2}\sin(x) - 6$

7.  $f(x) = -3\sin(4x)$

8.  $y = \sin\left[\frac{1}{3}x\right] + 3.5$

9.  $f(x) = -\cos(x) + 2\pi$

10.  $f(x) = 5\cos(x - 1) - \frac{1}{4}$

## Exponential and Logarithmic Equations

Rewrite each logarithmic equation as an exponential equation and vice versa.

1.  $2 = \log_4(x)$

2.  $3 = \log_2(x)$

3.  $x = \log_5(30)$

4.  $4^x = 80$

5.  $\left(\frac{1}{2}\right)^x = 64$

6.  $x^3 = 343$

7.  $5^x = \frac{1}{125}$

8.  $\log(32) = x$

9.  $11^3 = x$

10.  $-4 = \log_x\left(\frac{1}{16}\right)$

What is the value of  $x$  in each equation below? If necessary, rewrite the expression in the equivalent exponential equation to verify your answer.

11.  $4 = \log_5(x)$

12.  $2 = \log_9(x)$

13.  $6 = \log(x)$

14.  $81 = 9^x$

15.  $\left(\frac{1}{3}\right)^x = 243$

16.  $6^x = 7776$

17.  $7^x = \frac{1}{49}$

18.  $\log_2(32) = x$

19.  $\log_{11}(x) = 3$

20.  $\log_5\left(\frac{1}{125}\right) = x$

Graph each of the following equations.

21.  $y = \log(x + 2)$

22.  $y = 3\log(x - 7) + 5$

23.  $y = -\log(x - 4)$

24.  $y = \log(x) - 5$