

The purpose of this assignment is for you to determine if you have enough algebra and precalculus background to take Math 235 instead of Math 231-232. Everything on this assignment is covered in Math 231-232 but assumed in Math 235.

The cutoff placement score for Math 235 is 30/45. Check on ecampus to see if you are over this cutoff. If you are, then you might want to take Math 235 instead of this course. If you are close to the cutoff and you can do all of the problems on this assignment then you might also consider Math 235.

This assignment is worth up to 10 points, based on how many problems you attempt, NOT on how many you get correct, since in Math 231-232 these problems are not necessarily prerequisite knowledge. Just do the best you can.

The primary purpose of WebWork is to let you know that you are getting the correct answer or to alert you if you are making some kind of mistake. You can attempt a problem as many times as you want before the due date. However, if you get an answer wrong then you should look up the technique in a book or online or ask a friend or tutor before trying to answer again. Don't spend a lot of time guessing – it's not very efficient or effective.

Give 4 or 5 significant digits for (floating point) numerical answers. For most problems when entering numerical answers, you can if you wish enter elementary expressions such as  $2 \wedge 3$  instead of 8,  $\sin(3 * \pi/2)$  instead of -1,  $e \wedge (\ln(2))$  instead of 2, etc. Here's the [list of the functions](#) which WebWork understands.

1. (1 pt) Library/ASU-topics/setTrigRelations/p9.pg

Evaluate the following expressions.

Note: The answer must be given as a fraction, NO DECIMALS. If the answer involves a square root it should be entered as *sqrt* . For instance, the square root of 2 should be written *sqrt(2)*.

If  $\sin(\theta) = -\frac{4}{7}$ , and  $\theta$  is in quadrant III, then find

- (a)  $\cos(\theta) =$  \_\_\_\_\_
- (b)  $\tan(\theta) =$  \_\_\_\_\_
- (c)  $\sec(\theta) =$  \_\_\_\_\_
- (d)  $\csc(\theta) =$  \_\_\_\_\_
- (e)  $\cot(\theta) =$  \_\_\_\_\_

2. (1 pt) Library/maCalcDB/setTrigonometry3WordProblems/srw6.2.44.pg

The captain of a ship at sea sights a lighthouse which is 120 feet tall.

The captain measures the the angle of elevation to the top of the lighthouse to be  $16^\circ$ .

How far is the ship from the base of the lighthouse?

\_\_\_\_\_

(Show the student hint after 5 attempts: )

Hint: Did you convert degrees to radians?

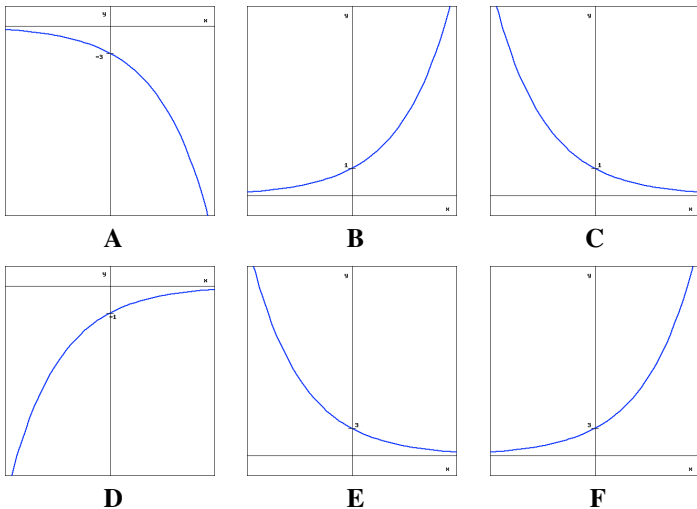
3. (1 pt) Library/LoyolaChicago/Precalc/Chap3Sec3/Q02.pg

Consider the function  $f(x) = (3)^x$ .

- (a) Complete the table of values of  $f(x)$  for  $x = -3, -2, -1, 0, 1, 2, 3$ .

x	-3	-2	-1	0	1	2	3
f(x)	_____	_____	_____	_____	_____	_____	_____

(b) Which of the graphs below could represent the graph of  $f(x)$ ?



(Click on a graph to enlarge it.)

4. (1 pt) Library/LoyolaChicago/Precalc/Chap3Sec3/Q18.pg

The earth's atmospheric pressure,  $P$ , in terms of height above sea level is often modeled by an exponential decay function. The pressure at sea level is 1013 millibars and the pressure decreases by 14% for every kilometer above sea level.

(a) What is the atmospheric pressure at 20 km?  
\_\_\_\_\_ millibars

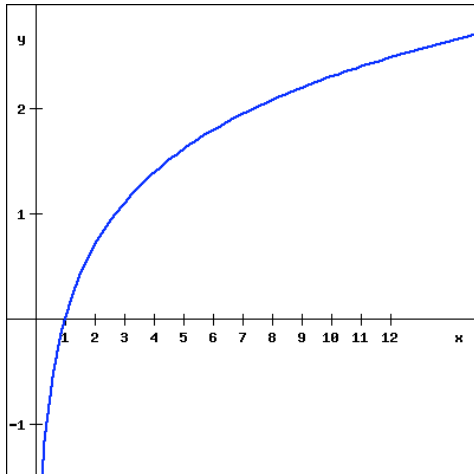
(b) Estimate the altitude  $h$  at which the atmospheric pressure equals 950 millibars.  
\_\_\_\_\_ km.

5. (1 pt) Library/LoyolaChicago/Precalc/Chap4Sec3/Q22.pg

Which of the following equations could possibly be a formula for the graph?

There may be more than one correct answer. Select all that apply.

- A.  $y = e^{-x}$
- B.  $y = -e^{-x}$
- C.  $y = \log(x)$
- D.  $y = -\ln(x)$
- E.  $y = \ln(x)$
- F.  $y = -\log(x)$



(Click on graph to enlarge)

6. (1 pt) Library/LoyolaChicago/Precalc/Chap4Review/Q08.pg  
Question 8:

Use logarithms to find an EXACT solution to the equation below.

$$e^{0.11t} = 37$$

$t =$  \_\_\_\_\_ (do NOT approximate your answer)

7. (1 pt) Library/LoyolaChicago/Precalc/Chap4Sec1/Q24.pg  
Rewrite each of the following as an expression of  $x$  which does not involve any logs.

(a)  $\log_{10}(1000^x) =$  \_\_\_\_\_ [help \(formulas\)](#)

(b)  $100^{\log_{10}(x)} =$  \_\_\_\_\_ [help \(formulas\)](#)

(c)  $\log_{10}(0.01^x) =$  \_\_\_\_\_ [help \(formulas\)](#)

8. (1 pt) Library/LoyolaChicago/Precalc/Chap2Sec6/Q22.pg  
Question 22:

Find the zero(s) (if any) of the function  $y = -2(x+3)^2 - 2$

Enter your answer as a comma separated list. If no zeros exist, enter NONE .

The zero(s) are  $x =$  \_\_\_\_\_

9. (1 pt) Library/maCalcDB/setAlgebra05RationalExpressions-Test2\_1.pg  
Write the following as a simple fraction in lowest terms.

$$\frac{(-3)^{-4} + (-3)^{-2}}{-3^{-3}}$$

\_\_\_\_\_

10. (1 pt) Library/Utah/Intermediate\_Algebra/set7\_Exponential\_and\_Logarithmic.F/s7p10.pg

Enter numerical values for the following powers. I recommend you don't use a calculator, to make sure you understand the concepts involved. Your answer needs to be a natural number, the system will not accept an arithmetic expression.

$$9^{\frac{3}{2}} = \underline{\hspace{2cm}}$$

$$8^{\frac{5}{3}} = \underline{\hspace{2cm}}$$

$$27^{\frac{4}{3}} = \underline{\hspace{2cm}}$$

11. (1 pt) Library/ma112DB/set8/sw5.2.19.pg  
Find the quotient and remainder using synthetic division for

$$\frac{x^5 - x^4 + 7x^3 - 7x^2 + 6x - 9}{x - 1}$$

The quotient is \_\_\_\_\_

The remainder is \_\_\_\_\_

12. (1 pt) Library/ma112DB/set8/sw5.2.5.pg  
Find the quotient and remainder using long division for

$$\frac{x^3 - 3x^2 + 6x + 3}{x^2 - 2x + 2}$$

The quotient is \_\_\_\_\_

The remainder is \_\_\_\_\_

13. (1 pt) Library/FortLewis/Algebra/3-3-Absolute-value/MCH1-3-3-18-Absolute-value.pg

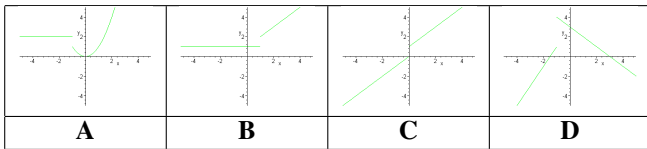
Solve the inequality  $|4 - 2x| \leq 18$ . Enter your answer as an inequality.

[help \(inequalities\)](#)

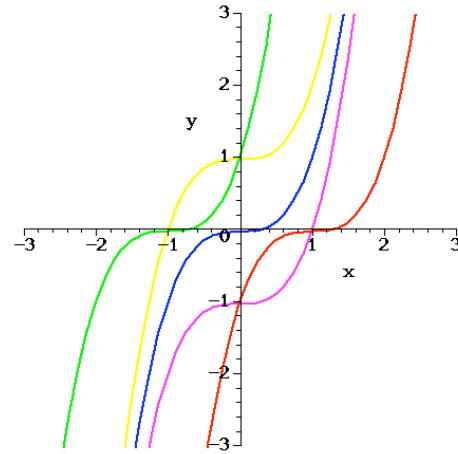
14. (1 pt) Library/maCalcDB/setAlgebra16FunctionGraphs-/c2s2p59\_72/c2s2p59\_72.pg

Match the functions with their graphs. Enter the letter of the graph below which corresponds to the function. (Click on image for a larger view )

- \_\_\_1. Piecewise function :  $f(x) = 1$ , if  $x \leq 1$  and  $f(x) = x + 1$ , if  $x > 1$
- \_\_\_2. Piecewise function :  $f(x) = 2$ , if  $x \leq -1$  and  $f(x) = x^2$ , if  $x > -1$
- \_\_\_3. Piecewise function :  $f(x) = 2x + 3$ , if  $x < -1$  and  $f(x) = 3 - x$ , if  $x \geq -1$
- \_\_\_4. Piecewise function :  $f(x) = x$ , if  $x \leq 0$  and  $f(x) = x + 1$ , if  $x > 0$



15. (1 pt) Library/Utah/College\_Algebra/set6.Polynomial\_and\_Rational\_Functions-/1050s6p6/1050s6p6.pg



Match the colors of the graphs in this Figure with the functions given below. Enter y for yellow, b for blue, r red, p for purple, and g for green, as appropriate.

- A. \_\_\_  $f(x) = x^3$
- B. \_\_\_  $f(x) = (x - 1)^3$
- C. \_\_\_  $f(x) = (x + 1)^3$
- D. \_\_\_  $f(x) = x^3 - 1$
- E. \_\_\_  $f(x) = x^3 + 1$