Sample of Material from MAT116 at Broome Community College

This material is for sample purposes only and is not to be considered as an official listing of topics.

1. Simplify the following using rules of exponents.

a) $\frac{b^7}{b^2}$ b) $b^{-6}b^{28}$ c) $\frac{(b^5)^{-3}}{b^6}$

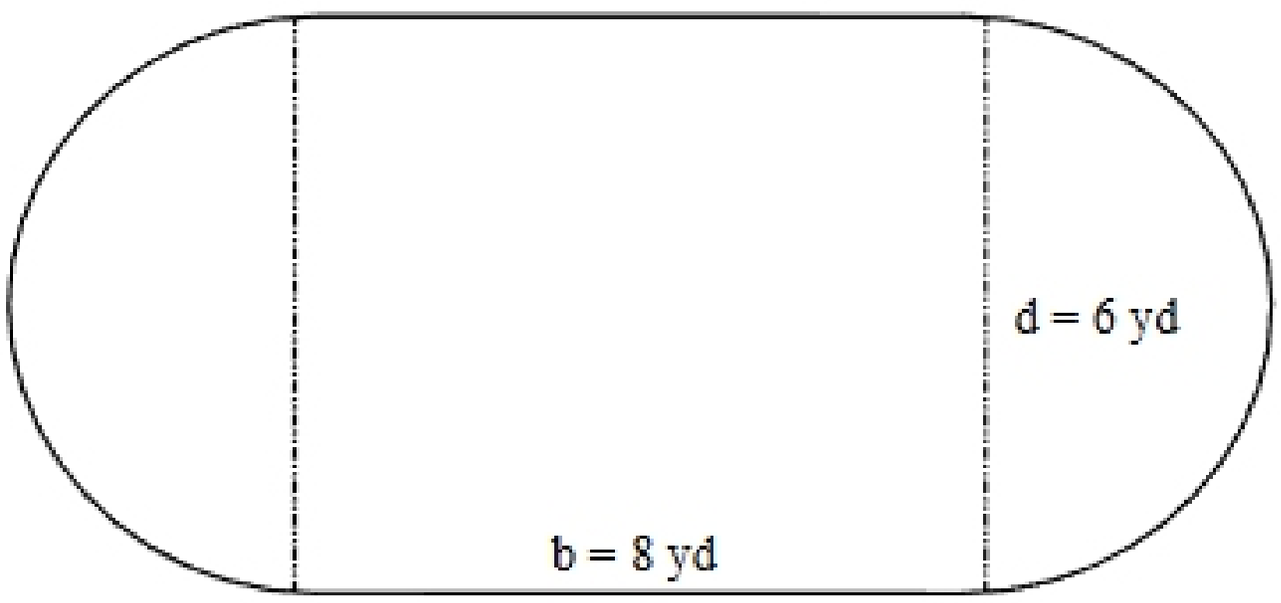
2. Write $1.2x10^{-3}$ in decimal notation.

3. Write 76,000,000,000 in scientific notation.

4. Simplify $(3.2\times10^{-56})(2\times10^{80})$. The answer must be given in scientific notation.

5. Egbert has 7×10^8 hairs on his head. If he loses 1,000 a day, how many years will it take him to go bald?

6. Find the perimeter of the following figure.



7. Egbert knows that the true weight of his pet rock is 10.7 pounds. On scale #1 his pet rock weighs 11 pounds. On scale #2 his pet rock weighs 8.5 pounds. Which scale is more accurate and which scale is more precise?

8. Fill in the following table, converting into percents, fraction and decimals.

Percent	Decimal	Fraction
18.3%		
		$\frac{1}{8}$

9. Convert each using a fraction chain:

a) 48 teaspoons to cups b) 5 square yards to square feet

10. Egbert is trying to get in earn some money. On the first day he earned $80. The next day he earned 10% more than he did on day 1. On day three he earned 3/4 of the money he earned on day 2. On day four he earned 40% more that he did on day 3. Determine how much he made in total for the four days?

11. a) Find the compound interest earned on $9000 at 8% compounded monthly for 20 years.

b) Find the compound interest earned on $9000 at 8% compounded continuously for 20 years.

12. Find the present value if you want to achieve $9,000 in 20 years at 8% interest compounded monthly.

13. You want to purchase a truck that has a sticker price of $30,000 with factory rebates of $5,000.

a) Find the monthly payments if financed for 60 months at 0% APR.
b) Find the monthly payments if financed for 60 months at 2.9% APR with the rebates included
c) Which is the better deal?

14. Fill in the missing entries in the table. Use either the ordinary annuity formula or the sinking fund formula.

Periodic deposit (m)	Frequency Compounded (n)	Rate (r)	Time (years) (t)	Future value (A)
$120	Monthly	8%	30	

15. Here is a preference schedule for a recent election. Use it to answer the following questions.

	10	8	8	4	4
1st	Egbert	Norman	Gomez	Norman	Herman
2nd	Norman	Herman	Herman	Egbert	Norman
3rd	Herman	Gomez	Egbert	Gomez	Gomez
4th	Gomez	Egbert	Norman	Herman	Egbert

a) How many people voted?
b) How many votes are needed for a majority?
c) Who wins using the Plurality method?
d) Who wins using the method of pairwise comparisons?
e) Who wins using the Hare method (sequential voting method)?

16. Which of the following sets represent functions?

a) {(1,1),(1,2),(7,4),12,9)}

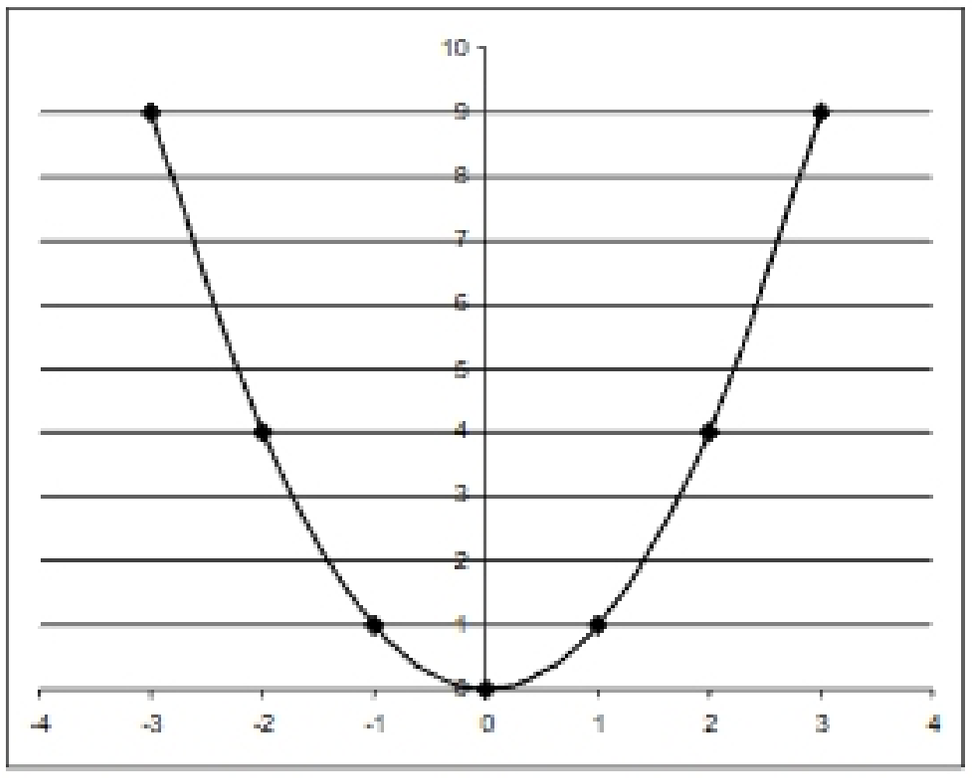
b) {(3,2),(2,3),(4,4),(3,4)}

17. Given $f(x) = 3x^2 - 8$

a) Find f(2)

b) Find f(0)

18. Classify the graph as linear, parabolic, periodic, exponential or logistic and then state the **range only** of each. You may approximate some of the values.



19. Suppose that a savings account has a doubling time of 10 years. How much you will have in 35 years if you have $18,000 to begin with.

20. Find the amount of a radioactive substance after 250 years if the half-life of the substance is 150 years and the amount to begin with is 700kg.

21. If the number of sea turtles decreases at a rate of 1.0% per year, how many sea turtles will there be in 20 years if there are 200,000 sea turtles to begin with?

22. The maximum temperature in Dallas, Texas averages about 100° in August, while the minimum temperature averages about 52° in February.

a) Find the equation that will model the temperatures for Dallas.
b) Use the equation to find the average temperature for the month of July.

23. A culture of bacteria grows continuously at a rate of 2% per hour. If the culture was started with 0.02 ounce of bacteria, how long until it grows to 2 ounces?