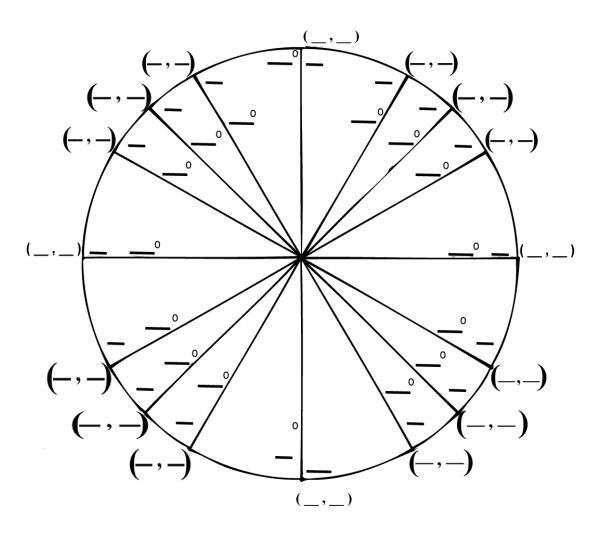
Summer Assignment for AP Calculus

Know your Unit Circle inside and out! Especially the radians!

Complete the following sheet below.

Unit Circle, Fill in the blank



www.mathwarehouse.com/unit-circle



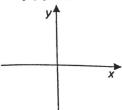
CONCEPTS WORKSHEET

Graphical Analysis

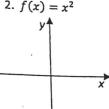
Chapter 1 deals with functions and their characteristics. To facilitate a study of functions, it is important to visualize mentally the graphical image of a function when given an algebraic description.

Graph each function. Clearly indicate units on the axes provided. I.

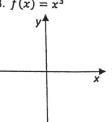
1.
$$f(x) = x$$



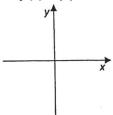
$$2. f(x) = x^2$$



$$3. f(x) = x^3$$



$$4. \ f(x) = |x|$$

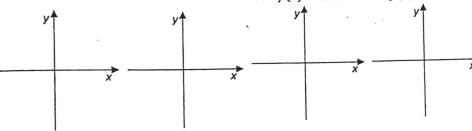


5.
$$f(x) = [x]$$

$$6. \ f(x) = \sin x$$

7.
$$f(x) = \cos x$$

$$8. \ f(x) = \tan x$$

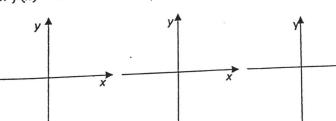


$$9. \ f(x) = \sec x$$

$$10. f(x) = 2^x$$

$$11. \ f(x) = \log_2 x$$

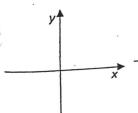
12.
$$f(x) = \frac{1}{x}$$

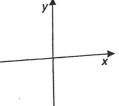


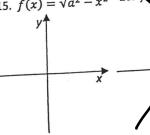


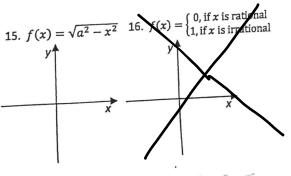
14.
$$f(x) = \sqrt{x}$$

15.
$$f(x) = \sqrt{a^2 - x^2}$$









II. Answer the following questions about the indicated functions. In completing the table below use the following abbreviations: R, for the set of real numbers; J, for the set of integers; and N, for the set of natural numbers.

Function	Domain	Range	Roots (Find x when	ح وودر	Even or Odd Function – $f(-x) = f(x)$ or	ls the function periodic? If so	Is f(x) a one-to- one mapping? (For each f(x)	State the x coordinates of
$1. \ f(x) = x$		x = f(x)	I(x) = 0	or origin	f(-x) = -f(x)	state the period.	exists.)	any points of discontinuity
$2. f(x) = x^2$								
$3. f(x) = x^3$								
4. f(x) = x								
5. f(x) = [x]								
$6. f(x) = \sin x$								
$7. f(x) = \cos x$								
$8. f(x) = \tan x$								
$9. f(x) = \sec x$								
$10. f(x) = 2^x$								
$11. f(x) = \log_2 x$								
12. f(x) = 1/x								
13. $f(x) = 1/x^2$								
$14. f(x) = \sqrt{x}$								
15. $f(x) = \sqrt{a^2 - x^2}$								
16. $f(x) = \begin{cases} 0, x \text{ is rational} \\ x \text{ is irrational} \end{cases}$								
				•				

رس

Exponent Rules Review Worksheet

NOTE: Anything to the zero power equals 1!

Product Rule: When multiplying monomials that have the same base, add the exponents.

$$x^m \cdot x^n = x^{m+n}$$

Example 1:
$$x \cdot x^3 \cdot x^4 = x^{1+3+4} = x^8$$
 Example 2: $(2x^2y)(-3x^3y^4) = 2 \cdot (-3) \cdot x^2 \cdot x^3 \cdot y \cdot y^4 = -6x^5y^5$

Power Rule: When raising monomials to powers, multiply the exponents.

$$(x^m)^n = x^{mn}$$

Example 3: $(x^2v^3)^4 = x^{2 \cdot 4}v^{3 \cdot 4} = x^8v^{12}$

Example 3:
$$(x^2y^3)^4 = x^{2 \cdot 4}y^{3 \cdot 4} = x^8y^{12}$$
 Example 4: $(2x^3yz^2)^3 = 2^3x^{3 \cdot 3}y^3z^{2 \cdot 3} = 8x^9y^3z^6$

Quotient Rule: When dividing monomials that have the same base, subtract the exponents.

$$\frac{x^m}{x^n} = x^{m-n}$$

Example 5:
$$\frac{x^3}{x^{-2}} = x^{3-(-2)} = x^5$$
 Exam

Example 6:
$$\frac{5^6}{5^2} = 5^{6-2} = 5$$

Example 5:
$$\frac{x^3}{x^{-2}} = x^{3-(-2)} = x^5$$
 Example 6: $\frac{5^6}{5^2} = 5^{6-2} = 5^4$ Example 7: $\frac{36m^3n^5}{-9mn^4} = \frac{36}{-9} \cdot \frac{m^3}{m} \cdot \frac{n^5}{n^4} = -4m^2n$

Simplify each of the following. Copy the problem. Work on your own paper.

1)
$$a \cdot a^2 \cdot a^3$$

$$(6x^2)(-3x^5)$$

4)
$$b^3 \cdot b^4 \cdot b^7 \cdot b$$

2)
$$(2a^2b)(4ab^2)$$
 3) $(6x^2)(-3x^5)$ 4) $b^3 \cdot b^4 \cdot b^7 \cdot b$ 5) $(3x^3)(3x^4)(-3x^2)$

6)
$$(2x^2y^3)^2$$
 7) $(5x^2y^4)^3$ 8) $(6x^4y^6)^3$ 9) $(4x^3y^3)^3$ 10) $(7xy)^2$

8)
$$(6x^4y^6)^3$$

9)
$$(4x^3y^3)$$

11)
$$\frac{x^3}{x}$$

12)
$$\frac{18c^3}{-3c^2}$$

13)
$$\frac{9a^3b^5}{-3ab^2}$$

11)
$$\frac{x^3}{r}$$
 12) $\frac{18c^3}{-3c^2}$ 13) $\frac{9a^3b^5}{-3ab^2}$ 14) $\frac{-48c^2d^4}{-8cd}$ 15) $\frac{22y^6z^8}{2yz^{-7}}$

15)
$$\frac{22y^6z^8}{2yz^{-7}}$$

16)
$$x^2 \cdot x^7$$

17)
$$(x^2)$$

16)
$$x^2 \cdot x^7$$
 17) $(x^2)^7$ 18) $(-2x^4)^5$ 19) $2x^3 + 7x^3$ 20) 7^0

19)
$$2x^3 + 7x$$

21)
$$8x^0$$

24)
$$6x^0y^8 - (2y^2)^4$$

23)
$$(-3)^4$$
 24) $6x^0y^8 - (2y^2)^4$ 25) $(x+2y)(x-2y)$

26)
$$\frac{2x^3}{-8x^4}$$
 27) $\frac{xy^7}{x^3y^4}$

27)
$$\frac{xy^7}{x^3y^4}$$

28)
$$6x^5 \cdot 3x^5 \cdot x^6$$

28)
$$6x^5 \cdot 3x^5 \cdot x^0$$
 29) $\left(3st^{12}\right)^3$ 30) $\left(\frac{3m^2n^7}{m}\right)^5$

In Problems 63-82, solve each equation.

63.
$$7^x = 7^3$$

67.
$$\left(\frac{1}{5}\right)^x = \frac{1}{25}$$

71.
$$3^{x^3} = 9^x$$

64.
$$5^x = 5^{-1}$$

In Problems 03–82, solve each equation.

63.
$$7^{x} = 7^{3}$$

64. $5^{x} = 5^{-6}$

65. $2^{-x} = 16$

66. $3^{-x} = 81$

67. $\left(\frac{1}{5}\right)^{x} = \frac{1}{25}$

68. $\left(\frac{1}{4}\right)^{x} = \frac{1}{64}$

69. $2^{2x-1} = 4$

70. $5^{x+3} = \frac{1}{5}$

72.
$$4^{x^2} = 2^x$$

$$65. \ 2^{-x} = 16$$

69.
$$2^{2x-1} = 4$$

73.
$$8^{-x+14} = 16^x$$

66.
$$3^{-x} = 81$$

70.
$$5^{x+3} = \frac{1}{5}$$

74.
$$9^{-x+15} = 27^x$$

Evaluate each expression.

Answer

2) $\log_9\left(\frac{1}{3}\right) \cdot \log_7 49$

Answer

 $3) \frac{\log_3 27}{2 \log_2 4}$

Answer

4) $\log_6 36 + 5 \log_9 81$

Answer

5) $\left(\frac{1}{2}\right)\log_2 16 - \log_4 64$

Answer

6) log₅ 125 · log₂ 32

Answer

2 log₄ 16 log₇ 49

Answer

8) $\left(\frac{1}{3}\right)\log_3 27 + \log_8 64$

Answer

9) log₉ 729 – 2 log₂ 128

Answer

(10) log₆ 216 · log₅ 125

Answer