

NAME _____
AP CALCULUS SUMMER ASSIGNMENT 2019

DIRECTIONS: Each part must be completed separately on looseleaf. All work should be shown and done in a neat and precise manner. These assignments will be graded and you will have a test within the first two weeks of school in September. You are responsible to memorize the formulas and definitions. Any questions, email Mrs. Horiha. (chorihan@moorechs.org)

PART ONE: Solve for x by factoring. Complete all work on looseleaf and check your results.

1. $x^2 - 7x = 2x + 10$
2. $x^3 - 5x^2 - 4x + 20 = 0$
3. $7x^2 - 13x = 2$
4. $x^4 = 256$
5. $5x^2 - x = 4$
6. $10x(x - 2) = x(x - 1) - 13x - 1$
7. $9x^2 - 2 = 0$
8. $\frac{1}{4}x^2 - x + 1 = 0$
9. $7x^2 - 16x + 4 = 0$
10. $x^4 - 10x^2 + 9 = 0$

PART TWO: Solve algebraically and check.

1. $e^{3x-1} - 2 = -1$
2. $25^{x-2} = 125^{x+3}$
3. $64^{2x} = 32^{x+4}$
4. $\frac{3x-2}{x+2} = 0$
5. If $2x^2 - yx = 4$ and $x = -1$ find the value of y.
6. $4x^{1/2} - 2 = 3$
7. $2x^{-4} + 1 = 33$
8. $5 - (x - 2) - \frac{1}{2}(4 + 2x) = x - 1$
9. $\log_3 4 + \log_3 (x + 2) = 3$
10. $\log_a 10 + \log_a (x + 1) = \log_a 5$

PART FOUR: Show all work on looseleaf.

1. Write the equation of the line perpendicular to $3y - x = 2$ and passing through $(3, -10)$
2. Write the equation of the line normal to $4y - 2x = 1$ and passing through $(-1, 11)$
3. Write the equation of the line passing through the points $(2, 4)$ and $(-7, 15)$
4. Write the equation of the circle with radius 12 and having the center $(2, 1)$ in two different forms.
5. Write the equation of the circle where the endpoints of the diameter are $(2, 1)$ and $(-6, 7)$
6. Find the exact values of the following:
a. $\sin 150^\circ$ b. $\cos 330^\circ$ c. $\tan \frac{5\pi}{4}$ d. $\csc(-480^\circ)$ 5. $\sec\left(\frac{7\pi}{6}\right)$
7. Find the x -intercepts and y -intercepts of the following in ordered pair form.
a. $y = x^2 - 6x - 16$ b. $4x^2 + 5y^2 = 20$ c. $x = y^2 - 2y - 3$
8. Find in terms of π the volume of a sphere that has a diameter of 40 inches.
9. Find to the nearest tenth the surface area of a sphere that has a radius of $\frac{1}{4}$
10. Find to the nearest hundredth the volume of a right cylinder with a height of 4 inches and diameter of 5 inches.
11. If the area of the great circle of a sphere is 144π , find the volume and surface area of the sphere in terms of π .
12. Find to the nearest tenth the diameter of a sphere that has a volume of 566 cubic feet.

PART FIVE: Show all work on looseleaf.

1. If $f(x) = x^2 - 2x + 1$ and $g(x) = 3x - 3$ find the following and simplify completely.
a. $f(g(x))$ b. $g(f(x))$ c. $f(x)/g(x); x \neq 1$ d. $g(x) - f(x)$
2. If $\sin x = \frac{4}{5}$ find the exact value of $\cos(2x)$ where x is a positive acute angle.
3. Find the exact value of $\sin(15^\circ)$.
4. Find the exact value of the $\cos(45^\circ)$

5. If the $\sin A = \frac{1}{2}$ and angle A lies in quadrant II, find the exact value of the following:

a. $\cos(2A)$

b. $\tan(2A)$

c. $\sin(2A)$

6. Simplify completely the following:

a. $4\sin^2 A + 4\cos^2 A$

b. $\sqrt{x^2 - 6x + 9}$

7. Find the amplitude, frequency and period of $y = -3\cos(4x)$

8. Sketch the graph of $y = 4\sin x$ from $-\pi \leq x \leq \pi$