

### AP Calculus Summer Assignment

*These topics will be tested the day after you get back from Summer Break. Be prepared.*

Solve the following equations for  $x$ . (No calculator allowed and show all work)

1. $5\ln(x-2) - 2 = 28$	2. $e^{x-3} + 4 = 20$	3. $\frac{3}{x-4} - \frac{2}{3x} = 0$
4. $\tan x - 3 = -4; 0 < x < \pi$	5. $\frac{1}{4}\sin^3 x \cos x = 0; 0 \leq x \leq \pi$	6. $x^2 - 3x = 5$

Simplify the following expressions.

7. $\frac{x^2 - 4x - 5}{x^2 - 25}$	8. $\frac{4}{x} - \frac{5x}{x-3} + x^3$	9. $\frac{\tan x \cos x}{\csc x}$	10. $8^{-4/3}$	11. $(\sqrt[6]{27})^4$
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Write the equation of a line given the following information.

12. (3,5) and (-2,25)	13. (3,5) and (3,-3)	14. $m = 1/3$ and (2,3)
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Sketch the two equations on the same coordinate plane, then label the points of intersection, and  $x$  &  $y$ -intercepts.

15. $y = x + 1$ and $y = 4 + 3x - x^2$
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Use the unit circle to find the values of problems 16-18.

16. $\sin \frac{3\pi}{2}$	17. $\cos \frac{11\pi}{6}$	18. $\tan \frac{\pi}{6}$
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19. $f(x) = x^2 - 2x$ , $g(x) = 3x + 4$ , $h(x) = f(g(x))$ a) What is the value of $h(3)$ ?	b) What is the $h(x) - g(x)$ ?
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20. Sketch the following parent graphs.					
a) $y = x$	b) $y = x^2$	c) $y = x^3$	d) $y = \sqrt{x}$	e) $y =  x $	
f) $y = \frac{1}{x}$	g) $y = e^x$	h) $y = \sin x$	i) $y = \cos x$	j) $y = \tan x$	

21. Find the following limits: a) $\lim_{x \rightarrow 2} x^2 - 4$	b) $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3}$
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### Answers

1. $e^6 + 2$	2. $\ln(16) + 3$	3. $\frac{-8}{7}$	4. $\frac{3\pi}{4}$
5. $0, \frac{\pi}{2}, \pi$	6. $\frac{3 \pm \sqrt{29}}{2}$	7. $\frac{x+1}{x+5}$	8. $\frac{x^5 - 3x^4 - 5x^2 + 4x - 12}{x(x-3)}$
9. $\sin^2 x$	10. $\frac{1}{16}$	11. 9	12. $y = -4x + 17$
13. $x = 3$	14. $y = \frac{1}{3}x + \frac{7}{3}$	15. $x$ -int (-1,0) & (4,0) $y$ -int (0,1) & (0,4) intersection points (-1,0) & (3,4)	
16. -1	17. $\frac{\sqrt{3}}{2}$	18. $\frac{\sqrt{3}}{3}$	19. a) 143 b) $9x^2 + 15x + 4$
20. Use your graphing calculator to check answers		21. a) 0	b) 6