AP Calculus
2017-18 Semester 1 Most Missed Name: _____

1. If $f''(x) = (x - 3)(x + 4)^2(x - 2)$, find all inflection points.

2. $\lim_{h\to 0} \frac{\cos\left(\frac{\pi}{2}+h\right)-cos\frac{\pi}{2}}{h}$ =

3. From Limit Laws in Section 2.2

a) $\lim_{x\to 0} \frac{sin^2 3x}{3x}$ b) $\lim_{x\to 0} \frac{1-cosx}{x}$

4. If $f'(x) = \cos x$ and f(π/2) = 4, then $f(x)$ = ?

5. Use the table to find the following:

$\frac{d}{dx}(f(g(3))$

x	0	1	2	3	4
$f(x)$	$\frac{1}{2}$	$\frac{1}{3}$	1	-1	3
$g(x)$	-2	1	$-\frac{1}{2}$	2	$-\frac{1}{3}$
$f'(x)$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{1}{4}$	0	$-\frac{4}{5}$
$g'(x)$	-1	$\frac{2}{3}$	-4	-3	$-\frac{1}{3}$

6. If $g(x) = \frac{-3x-f(x)}{f(x)}$ and $f(1) = 2$ and $f'(1) = -3$, then $g'(1)$ = ?

7. $\int_{-3}^{1} \sqrt{5}x^{-3}$

8. If a) $f(x) = 5$, then $f'(2)$ = ? b) $f(x)= \pi^5$, then $f'(2)$ = ?

9. What is the slope of the line tangent to $y = \cos^2(2x + \pi)$ at $x = 3\pi/4$?

10. Find the horizontal asymptotes of $f(x) = \frac{2-|x|}{x}$

11. If *f(c)* is a local maximum of a continuous function *f* on an open interval (a, b), then *f'(c) = 0.* Is this true or false? Justify your answer.

12. Find all critical values and relative max/min of each:

a) $f'(x) = \frac{2}{3}x^{-1/3}$

b) $f'(x) = \frac{x^2-5}{x}$

13. A particle moves along the x-axis and the position for $0 \le t \le 10$ is given by $s(t) = 3\cos(\frac{\pi}{3}t)$

Find the acceleration of the particle at t = 4. Is the particle speeding up, slowing down or neither?