Calc AB Quiz Prep Name: Block: Seat:

Stuff to Know Cold for Calculus AB

1. (3 points) L'Hoȗital's Rule:

   If $\lim_{x\to a}\frac{f(x)}{g(x)} =$ _____ OR _____

   then $\lim_{x\to a}\frac{f(x)}{g(x)} =$

2. (6 points) Particle Motion Position $= x(t)$

   Velocity = _____

   Speed = _____

   Acceleration = _____

   Displacement from a to b = _____

   Total Distance Traveled from a to b= _____

   Speed is decreasing when _____

   and _____ have _____ signs.

3. (5 points)

   (a) $\sin\left(\frac{2\pi}{3}\right) =$

   (b) $\cos\left(\frac{2\pi}{3}\right) =$

   (c) $\arcsin\left(\frac{1}{2}\right) =$

   (d) $\cos(\pi) =$

   (e) $\tan\left(\frac{3\pi}{4}\right) =$

4. (5 points) Justifying Absolute Extrema

   (a) Critical Points of $f(x) =$ _____ OR _____

   (b) Absolute/Global Max or Min:

   _____ Test

   (c) Must include all and only the values of the

   _____ points and the

   _____ points

5. (6 points) 2 ways to justify Local/Relative Minimum of $f(x)$:

   (a) If _____ _____ from _____
   $_{noun}$ $_{verb}$

   to _____ OR

   (b) If $f'(x) = \frac{dy}{dx} =$ ___ AND $f''(x) = \frac{d^2y}{dx^2}$_____ 0

6. (6 points) 2 ways to justify Local/Relative Maximum of $f(x)$:

   (a) If _____ _____ from _____
   $_{noun}$ $_{verb}$

   to _____ OR

   (b) $f'(x) = \frac{dy}{dx} =$ _____ AND $f''(x) = \frac{d^2y}{dx^2}$_____ 0

7. (5 points) Points of Inflection of $f(x)$:

   If _____ $= 0$ OR _____ does not exist
   AND

   _____ changes _____ **OR if**

   f' changes from _____ to _____

   or _____ to _____

8. (2 points) Extreme Value Theorem: If $f(x)$ is

   _____ on $[a, b]$, then there exists a(n)_____
   maximum and minimum on that interval.

9. (3 points) Intermediate Value Theorem: If $f(x)$

   is _____ on $[a, b]$, and k is between

   _____ and _____, then there exists a c,

   $a < c < b$, where _____.

10. (5 points)

(a) $\dfrac{d}{dx}\left(x^n\right) =$

(b) $\dfrac{d}{dx}\left(\ln x\right) =$

(c) $\dfrac{d}{dx}\left(e^x\right) =$

(d) $\dfrac{d}{dx}\left(\sec x\right) =$

(e) If a is a constant, $\dfrac{d}{dx}\left(a^x\right) =$

11. (5 points)

(a) $\displaystyle\int \cos x \; dx =$

(b) $\displaystyle\int \sec^2 x \; dx =$

(c) $\displaystyle\int \frac{1}{x} \; dx =$

(d) $\displaystyle\int \frac{1}{1+x^2} \; dx =$

(e) If a is a constant, $\displaystyle\int a^x \; dx =$

12. (2 points)

$\_\_\_\_\_ = \lim\limits_{h\to 0} \dfrac{f(x+h)-f(x)}{h}$

$\_\_\_\_\_ = \lim\limits_{x\to c} \dfrac{f(x)-f(c)}{x-c}$

13. (3 points)

$\dfrac{d}{dx}\left(f(x)g(x)\right) =$

$\dfrac{d}{dx}\left(\dfrac{f(x)}{g(x)}\right) =$

$\dfrac{d}{dx}\left(\; f(g(x))\;\right) =$

14. Area between $f(x)$ and $g(x)$ from $x = a$ to $x = b$:

15. Volume of revolution of $y = f(x)$ around $y = 0$ from $x = a$ to $x = b$:

16. Volume of revolution of $x = g(y)$ around $x = 0$ from $y = c$ to $y = d$:

17. Volume of a solid whose cross sectional area is $A(x)$ from $x = a$ to $x = b$:

18. for any constant a, $\dfrac{d}{dx}\displaystyle\int_a^{f(x)} g(t)\; dt =$

19. If $f(x)$ is continuous on $[a, b]$ and differentiable on (a, b), then the average value $f(c) =$

20. $\lim\limits_{x\to 0} \dfrac{\sin x}{x} =$