

Name \_\_\_\_\_

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1. Define  $\ln(x)$ .

2. Define the number  $e$ .

3		7	
4		8	
5		9	
6		10	

3. The curve  $y = e^{-2x^2+10x}$  has two inflection points. One is at  $x = 3$  and the other is at  $x =$

- (a) 0                      (b) 2                      (c) 2.5                      (d)  $\sqrt{5}$                       (e) 5

4. The domain of  $g(x) = \frac{e^x}{\ln(x+1) - 1}$  is

- (a) all real numbers  $x > 0$   
(b) all real numbers  $x$  except  $e - 1$   
(c) all real numbers  $x > -1$  except  $e - 1$   
(d)  $-1 < x < e - 1$   
(e) all real numbers  $x$  except  $x = -1$

5.  $\int_0^2 xe^{x^2} dx =$

- (a)  $\frac{e^4 - 1}{2}$                       (b) 2                      (c)  $e^2 - 1$                       (d)  $\frac{1}{2}e^4$

6. The function  $f$  defined by  $f(x) = \int_1^x \sqrt{3+t^4} dt$  is invertible and  $(f^{-1})'(0) =$

- (a)  $-\frac{1}{\sqrt{3}}$                       (b)  $\frac{1}{\sqrt{3}}$                       (c)  $\frac{1}{2}$                       (d)  $\sqrt{3}$                       (e) 2

7.  $\lim_{x \rightarrow 0^-} \exp\left(\frac{1}{x}\right) =$

- (a) 0                      (b) 1                      (c)  $e$                       (d)  $\infty$                       (e)  $-\infty$

8.  $\int \ln(x) dx =$

- (a)  $x \ln(x) - x + C$   
(b)  $\frac{1}{x} + C$   
(c)  $\frac{(\ln(x))^2}{2} + C$   
(d)  $e^x + C$   
(e)  $x \ln(x) + C$

9. The absolute minimum value of  $h(x) = x^2 \ln(x)$  is

- (a)  $-\frac{1}{\sqrt{e}}$                       (b)  $\sqrt{e}$                       (c)  $\frac{2}{e}$                       (d)  $-\frac{1}{2e}$                       (e)  $-2e$

10.  $\int \tan(x) dx =$

- (a)  $\cot(x) + C$   
(b)  $\sec(x) + C$   
(c)  $\sec^2(x) + C$   
(d)  $-\ln(\cos(x)) + C$