Take-Home Quiz 2

Course: Math141 Name: _____

NO Work, No points. Square or Circle your final Answer.

1. Simplify each expression.

(a) $\ln\left(\frac{1}{e^3}\right) =$

(b) $e^{\ln 10} =$

(c) $e^{x-\ln x} =$

(d) $2^{\log_2 9+\log_2 35-\log_2 7} =$

(e) $\log_3 \sqrt{3} + \log_3 18 - \log_3 2 =$

2. Solve each equation for x.

(a) $e^{2x} - 4e^x - 45 = 0$

(b) $\ln x = 1 - \ln(4x+1)$

3. Find the inverse function.

(a) $f(x) = \ln(2x+3) - 4$

(b) $f(x) = \dfrac{1+3e^x}{3-e^x}$

4. Find the limit.

(a) $\displaystyle\lim_{x\to\infty} \frac{4e^{3x}+e^x+e^{-4x}}{5e^{4x}-e^x-e^{-4x}} =$

(b) $\lim_{x \to -2^+} e^{x/(x+2)} =$

(c) $\lim_{x \to \infty} (0.99)^x =$

(d) $\lim_{x \to 4^+} \log_{0.5}(x^2 - 3x - 4) =$

5. Find the derivatives of the given functions.

(a) $y = \dfrac{1 - e^{2x}}{1 + e^{2x}}$

(b) $f(x) = \csc(e^x) - 4e^{\cot x}$

(c) $g(x) = \cos^2\left(e^{x^4}\right)$

(d) $f(x) = \log_3\left(e^{-x}\sin(3x)\right)$

(e) $y = (\ln x)^{\ln x}$

(f) $y = (\tan x)^{\sqrt{x}}$

6. Evaluate the integral.

(a) $\displaystyle\int \frac{e^{\sqrt{x}}}{2\sqrt{x}}\, dx =$

(b) $\displaystyle\int_{\sqrt{\ln(\pi/3)}}^{\sqrt{\ln(\pi/2)}} x e^{x^2} \sin\left(e^{x^2}\right)\, dx =$

(c) $\displaystyle\int \frac{(1-e^x)^2}{e^x}\,dx =$

(d) $\displaystyle\int_1^{e^2} \frac{4^{\ln x}}{x}\,dx =$

(e) $\displaystyle\int \frac{(\log_2 x)^3}{x}\,dx =$

(f) $\displaystyle\int \frac{3^x}{3^x+5}\,dx =$