

Quiz 4: Exam 1 Review
September 16th, 2016

Don't forget your name: _____

Score: _____ /30

1) Let $f(x) = e^{\sqrt{x}}$, and $g(x) = x^3e^x$

a) Show algebraically that $f(x)$ is one-to-one.

b) Find $f^{-1}(x)$, and give its domain.

c) Find $(g^{-1})'(e)$

2) Evaluate each of the following.

a) $\tan(\arcsin(\frac{1}{2}))$

b) $\lim_{x \rightarrow 0} (\sin(x))^{1-e^x}$ (HINT: you will use l'Hospital's rule twice)

3) Differentiate each of the following.

a) $f(x) = 3^{x^4}$

b) $g(x) = x^{e^x}$

c) $h(x) = \log_5(\cos(\arctan(x)))$

4) Evaluate each of the following integrals.

a) $\int \tan^5(x) dx$

b) $\int_{-2}^{-1} \frac{2}{5 + 4x + x^2} dx$

c) $\int \frac{x^4}{\sqrt{x^4 - x^{10}}} dx$

d) $\int_0^\pi x \sin(x) \cos(x) dx$

e) $\int (\arcsin(x))^2 dx$

rules:

1. This review does not claim to be (nor is it) comprehensive. It is intended to help you prepare for the exam.
2. *This will be presentation quality.* Papers with scratch work or large erasures will not be graded.
3. This is due at 9:40 AM on Wednesday, September 21st.