Homework 3 - Math 142 **Name:** _____

Bring your solutions to these problems to class on Friday. You can use them during the quiz.

1. Find the antiderivative of $\sqrt{e^x}$.

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2. Compute $\dfrac{d}{dx}\dfrac{1}{1+e^x}$.

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3. Compute $\displaystyle\int_0^{\pi} \cos x\, e^{\sin x}\, dx$.

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4. Use a reference triangle to find $\sin(\sec^{-1}(\sqrt{5}))$

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5. Use a reference triangle to simplify $\cos(\tan^{-1}(2x))$.

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6. Compute $\dfrac{d}{dx}\arctan(e^x)$.

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7. Find the x-value of the maximum for the function $f(x) = x^3\, e^{-x}$.

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8. Find the following without a calculator/computer:

   (a) $\log_2(12) + \log_2(\frac{2}{3})$

   (b) $\log_5(100) - \log_5(4)$

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9. Solve the following equations for x.

   (a) $\log_{10}(x) + \log_{10}(x) = 8$

   (b) $\log_x(10) = 2$

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10. Find these logarithms without a calculator/computer:

    (a) $\log_2(8\sqrt{8})$

    (b) $\log_{10}\left(\frac{1}{\sqrt{1{,}000{,}000}}\right)$
