MATH 251 (PHILLIPS) MIDTERM 0 EXTRA PROBLEM LIST SET 1

1. Simplify the following expression as much as possible. If no simplification is possible, write "not possible": $\dfrac{\sin(7x) + 7}{\sin(7x) - 7}$

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2. Assuming $c > 0$, write the expression $\dfrac{2}{3\sqrt[3]{c}}$ as a numerical constant (possibly a fraction) multiplied by a power of c. (c may not appear in a denominator.)

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3. Find all real solutions to the equation $\dfrac{e^{-5x}}{x^2} = 0$. If no real solution exists, write "no solution".

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4. Let $g(x) = 7 - 4x$. Evaluate the expression $\dfrac{g(5 + h) - g(5)}{h}$, and simplify it as much as possible.

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5. Write as a single fraction, and simplify as much as possible: $\dfrac{3}{x + 4} - \dfrac{1}{x - 5}$

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6. Find all real solutions to the equation $\dfrac{8}{x} - x = -2$. If no real solution exists, write "no solution".

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7. Suppose $f(x) = 3x^3 + 4x^2 - 2x$. Find the exact value of $f(-2)$.

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8. Find the domain of the function $r(x) = (-x)^{-1/4}$.

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9. Multiply out: $(3t - 2)(4t - 6)$.

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10. Determine the exact value of the **slope** of the line in the graph below.