MATH 251 (PHILLIPS) MIDTERM 0 EXTRA PROBLEM LIST SET 3

1. Find all real solutions to the equation $4x^{-2} = 1$. If no real solution exists, write "no solution".

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2. Find all real numbers a such that $(2a, -a)$ is in the second quadrant (and not on any of the coordinate axes).

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3. Find all real solutions to the equation $4e^{5x+3} + 3 = 23$. If no real solution exists, write "no solution".

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4. Let $f(x) = 3 - x$. Evaluate the expression $f(1 - x) - f(1)$, and simplify it as much as possible.

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5. Write as a single fraction, and simplify as much as possible: $\dfrac{6}{c-4} - \dfrac{1}{c-2}$

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6. Find all real solutions to the equation $\dfrac{16w^{-1}}{w+6} = 1$. If no real solution exists, write "no solution".

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7. Multiply out: $(b+5)(b^2 - 2b + 3)$.

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8. Simplify the following expression as much as possible. If no simplification is possible, write "not possible": $\dfrac{3\cos(7x) + 12}{3\cos(7x) + 6}$

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9. Simplify completely (for $x \neq 0$): $\dfrac{\left(\frac{3}{2x^2}\right)}{\left(\frac{8}{3x}\right)}$

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10. The graph of $r(x) = \ln(3 - x)$ is the curve shown below. Give the exact value of the height of the rectangle.