

NAME: _____

Student id: _____

INSTRUCTIONS: No books, notes, calculators, etc. All answers must be simplified as much as possible. Write all answers in the spaces provided at the right. Do scratchwork on the back or on scratch paper provided. *No partial credit.* Time: 20 minutes.

1. Find all real solutions to the equation $\frac{7x}{x^2 - 8} = 1$. If no real solution exists, write “no solution”.

Answer: _____

2. Simplify the following expression as much as possible. If no simplification is possible, write “not possible”: $\frac{xe^x + x^2}{2xe^x + x^2}$

Answer: _____

3. Simplify completely (for $y > 0$): $\frac{\left(\frac{1}{6\sqrt{y}}\right)}{\left(\frac{2y^{5/2}}{9}\right)}$

Answer: _____

4. Multiply out: $(y^2 + 3y - 9)(y - 3)$.

Answer: _____

5. Let $f(x) = 7 - x$. Evaluate the expression $f(17) - f(2x - 3)$, and simplify it as much as possible.

Answer: _____

6. Write as a single fraction, and simplify as much as possible: $\frac{2}{y - 3} - \frac{1}{y - 5}$

Answer: _____

7. Find all real numbers a such that $(-a, 3)$ is in the first quadrant (and not on any of the coordinate axes).

Answer: _____

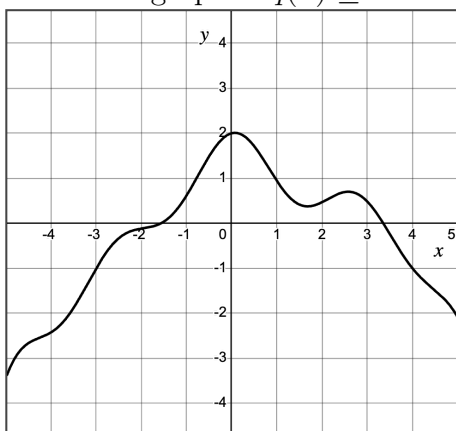
8. Find all real solutions to the equation $2e^{6x} + 3 = 15$. If no real solution exists, write “no solution”.

Answer: _____

9. Find all real solutions to the equation $6(2x^{-3} - 2) = -12$. If no real solution exists, write “no solution”.

Answer: _____

10. The graph of a function $y = q(x)$ is sketched below (at the left). For which values of x shown on the graph is $q(x) \geq -1$?



Answer: _____