

Practice Algebra Exam – Math 1060Q

This practice exam is longer than the actual exam will be. The actual exam will be 10 questions.

- Solve for x : $x^2 - 6x = 27$.
- Solve for y : $\frac{3 + 5y}{y} = 2y$
- Simplify as much as possible: $\frac{x^{-1} + x}{\frac{1}{x}}$.
- State the Quadratic Formula.
- Insert parentheses in two different ways to make this statement mean two different things:
 $ab^3 + b - c$.
- Factor completely: $6x^4 + 3x^3 - x^2$.
- Factor completely: $\frac{5ux^3}{y^2} + \frac{3uxy}{4}$.
- Simplify: $\frac{\frac{3y}{xz}}{\frac{z^2y}{x}}$.
- Which of the following are true? Circle all that are true.

$$3\frac{a}{b} = \frac{3a}{3b} \quad 3(a - b) - 3b = 3a \quad (ab)^3 = a^3b^3 \quad (a + b)^3 = a^3 + b^3$$

- Expand so that there are no parentheses: $5(x^3 + 2)^2$.
- Solve for x : $x^2 = x^4$.
- Are there any errors in the following solution? If so, circle each error and explain. If not, write "No Errors."

$$\begin{aligned} \frac{4}{x} + \frac{x}{2} &= 9 && \text{(equation)} \\ \frac{4}{x} + \frac{x}{2} &= 9 && \text{(cross-multiply on left-hand side)} \\ 8 + x^2 &= 9 && \text{(subtract 8 from both sides)} \\ x^2 &= 1 && \text{(take square root of both sides)} \\ x &= 1 && \text{(final answer)} \end{aligned}$$

- Subtract and simplify as much as possible: $\frac{4}{x+1} - \frac{x}{1-x}$.
- Solve for x : $\sqrt{x}(3x - 2) = 0$.
- Find the distance between the points $(-1, -2)$ and $(3, 4)$.
- Describe in words the set of points in the plane given by the relation $(x - 2)^2 + y^2 - 4 = 0$. Is the origin an element of this set?
- Rewrite $(-\infty, 4) \cup [3, 7]$ as a single interval, and rewrite $(-\infty, 4) \cap [3, 7]$ as a single interval.
- Find the solution set to $x(x - 3) > 4$ and write it using interval notation.
- Solve for x : $2|x + 7| - 3 = -1$.
- Fill in a value for a so that this equation has no solutions: $|x - 4| + a = 5$.