10350 ALG Gateway 01 Name _____ Section _____

1. Simplify the following expression giving your answer in the form $ka^m b^n$ where k, n, and m are constants to be determined.

$$\frac{a^2}{b^3} \cdot \sqrt{\frac{b^5}{16a}} \stackrel{?}{=}$$

2. Write the following quadratic function in the form $a(x+h)^2 + k$ where a, h and k are constants to be found.

$$2x^2 - 8x + 1 \stackrel{?}{=}$$

3. Let $f(x) = \dfrac{1}{x}$ and $g(x) = \dfrac{x}{2x-1}$. Find and simplify the composite function $g(f(x))$.

$g(f(x)) \stackrel{?}{=}$

4. Factor the following expression completely:

$1 - 81x^4 \stackrel{?}{=}$