

Quiz 6 Math 1010 (10 pts total), Name: \_\_\_\_\_

**1 (10 pts).** Solve the equation  $\frac{2}{3x+1} = \frac{1}{x} - \frac{6x}{3x+1}$ .

**Solution:**

$$\begin{aligned}\frac{2}{3x+1} &= \frac{1}{x} - \frac{6x}{3x+1} \\ x(3x+1) \left( \frac{2}{3x+1} \right) &= x(3x+1) \left( \frac{1}{x} - \frac{6x}{3x+1} \right) \\ 2x &= 3x+1 - x(6x) \\ 6x^2 - x - 1 &= 0 \\ (3x+1)(2x-1) &= 0\end{aligned}$$

The only possibilities are that  $x = -1/3$  or  $x = 1/2$ . But  $x = -1/3$  does not work (because it makes the denominator 0 in the original equation, so the only solution is  $x = 1/2$ ).