10350 Algebra Quiz

1a. Express the following as a single fraction in its simplest form.

$$\frac{4}{2x-1} - \frac{3}{x+2} \overset{?}{=}$$

1b. If $f(x) = 2x^2 + 1$ simplify the following expressions assuming that $x \neq 3$ and $h \neq 0$.

$$\frac{f(x) - f(3)}{x - 3} \overset{?}{=}$$

$$\frac{f(h+1) - f(1)}{h} \overset{?}{=}$$

2. If $f(x) = \dfrac{x-2}{2x+3}$ evaluate $f\left(\dfrac{1}{3}\right)$.

$$f\left(\dfrac{1}{3}\right) \overset{?}{=}$$

3. Let $g(n) = \dfrac{2^{2n}\sqrt{x^{n+1}}}{3^{n+2}}$. Find the expression $\dfrac{g(n+2)}{g(n+1)}$.

You should collect all like terms. The final answer should have no radicals and no negative exponents.

$$\dfrac{g(n+2)}{g(n+1)} \overset{?}{=}$$

4. Write the following expression as a single logarithmic expression.

$3 \ln x - \ln(2x) + \ln(4) \overset{?}{=}$

5. If $\ln 2 = a$ and $\ln 5 = b$ write the following expressions in terms of a and b.

5a. $\ln(50) \overset{?}{=}$

5b. $\ln \sqrt{\dfrac{5}{2}} \overset{?}{=}$

6. Rationalize $\dfrac{\sqrt{2}+2}{\sqrt{2}-1}$ and write in the form $a + b\sqrt{2}$ where a and b are numbers.

$$\dfrac{\sqrt{2}+2}{\sqrt{2}-1} \stackrel{?}{=}$$