Name: _____ Academic Integrity Signature: _____

I have abided by the UNCG Academic Integrity Policy.

Note: Correct numerical answers without justification will receive little or no credit.

1. (5 points) (Quotient Rule) Let u and v be differentiable functions. The derivative of the quotient, $\frac{d}{dx}\left(\frac{u}{v}\right)$ is

Solution:

$$\frac{d}{dx}\left(\frac{u}{v}\right) = \frac{vu' - uv'}{v^2}.$$

2. (5 points) Let $f(x) = 3x^2 - 2x + \sqrt{x} - e^{\pi} + 3\sqrt{2} + \cos(x)$. Compute $f'(x)$.

Solution: Note that e^{π} and $3\sqrt{2}$ are constants and so have derivative equal to 0. We can write $\sqrt{x}$ as $x^{1/2}$ and use the power rule to differentiate the remaining terms.

$$f'(x) = 6x - 2 + \frac{1}{2}x^{-1/2} - \sin(x).$$

 Points earned: _____ out of 10.