MATH 111–15 (Kunkle), Quiz 2 Name: _____
10 pts, 10 minutes Sept 7, 2017

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1 (10 pts). Perform the arithmetic operations and simplify the result.

$$\frac{1}{h}\left[\frac{1}{(h+3)^2}-\frac{1}{9}\right]$$

1.(Source: 1.5.25a) First subtract the fractions.

$$\frac{1}{(h+3)^2}-\frac{1}{9}=\frac{9}{9}\cdot\frac{1}{(h+3)^2}-\frac{1}{9}\cdot\frac{(h+3)^2}{(h+3)^2}=\frac{9-(h+3)^2}{9(h+3)^2}$$

Now the multiplication.

$$\frac{1}{h}\cdot\frac{9-(h+3)^2}{9(h+3)^2}=\frac{9-(h+3)^2}{9h(h+3)^2}$$

To check for common factors, we must factor the numerator. Either expand it, collect like terms, and then factor, or factor it as it stands now using the difference of squares. Either way, find and cancel the common factor of h:

$$\frac{\big(3-(h+3)\big)\big(3+(h+3)\big)}{9h(h+3)^2}=\frac{-h(6+h)}{9h(h+3)^2}=-\frac{(6+h)}{9(h+3)^2}.$$

(done)