Math 1010 - Quiz 7

University of Utah

Fall 2009

Name: Solutions

1. Combine and simplify. (5 points)

$$\frac{7}{2x-3}+\frac{3}{2x+3}$$

$$\frac{7(2x+3)}{(2x-3)(2x+3)}+\frac{3(2x-3)}{(2x-3)(2x+3)}$$

$$=\boxed{\frac{20x+12}{(2x-3)(2x+3)}}$$

2. Simplify the complex fraction. (5 points)

$$\frac{\left(\frac{1}{x}-1\right)}{\left(\frac{1}{x}+1\right)}$$

$$\frac{\left(\frac{1}{x}-1\right)x}{\left(\frac{1}{x}+1\right)x}=\boxed{\frac{1-x}{1+x}}$$

3. Divide the polynomials using any method of your choice. (5 points)

$$\frac{5x^3+6x+8}{x+2}$$

Synthetic Division

$$\begin{array}{r|cccc} -2 & 5 & 0 & 6 & 8 \\ & & -10 & 20 & -52 \\ \hline & 5 & -10 & 26 & -44 \end{array}$$

$$\Rightarrow \boxed{5x^2-10x+26-\frac{44}{x+2}}$$

Long Division

$$\begin{array}{r} 5x^2-10x+26 \\ x+2 \overline{)\,5x^3+0x^2+6x+8} \\ -(5x^3+10x^2) \\ \hline -10x^2+6x+8 \\ -(-10x^2-20x) \\ \hline 26x+8 \\ -(26x+52) \\ \hline -44 \end{array}$$

$$\Rightarrow \boxed{5x^2-10x+26-\frac{44}{x+2}}$$