**HW: Operations with Functions – Part II Division**

**Simplify the following Rational Expressions**

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| $ \frac{3}{5(a-1)}$ | 2.  $\frac{2}{3}$ |

Perform the operations when  and *g*(*x*) = 3*x* – 2.

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| 3.  $\frac{x(x-2)}{3x-2}$ | 4.  $\frac{3x-2}{x(x-2)}$ |

Preform the operations when *f*(*x*) = 3*x* + 3 and *g*(*x*) = *x*2 – 1

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| 5.  $\frac{3}{x-1}$ | 6.  $\frac{x-1}{3}$ |

**State the domain of the following functions.** (Remember, the denominator may not equal zero!)

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| 7.  $$\left(-\infty ,3\right)∪(3,\infty )$$ | 8. $$\left(-\infty ,-9\right)∪(-9,\infty )$$ |
| 9. $$\left(-\infty ,-\frac{7}{2}\right)∪(-\frac{7}{2},\infty )$$ | 10. $$\left(-\infty ,-2\right)∪(-2, 2)∪(2,\infty )$$ |

Preform the operations with the given functions. Then state the domain.

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| 11. *f*(*g*(*x*)) *f*(*x*) = 6*x*-1, *g*(*x*) = 5*x* –2$$\frac{6}{5x-2}$$$$\left(-\infty ,\frac{2}{5}\right)∪(\frac{2}{5},\infty )$$ | 12. *g* ○ *f*(*x*) *f*(*x*) = 2*x* + 9 and  $$\frac{3}{2x+9}$$$$\left(-\infty ,-\frac{9}{2}\right)∪(-\frac{9}{2},\infty )$$ |