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**SCHOOL OF PUBLIC POLICY  
UNIVERSITY OF MARYLAND**

**PUAF Mathematics Immersion Course  
Summer 2011**

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**Problem Set 1**

**Question 1: Simplify the following expressions**

1.  $8^3$
2.  $8^{-3}$
3.  $(-8)^3$
4.  $(-8)^{-3}$
5.  $-(8)^3$
6.  $-(-8)^{-3}$
7.  $8^{1/3}$
8.  $(1/8)^3$
9.  $(-1/8)^{1/3}$
10.  $(-1/8)^{-1/3}$

**Question 2: Simplify the following expressions**

1.  $8^2 + 6 * 3$
2.  $8^2 - 6 * 3$
3.  $(8^2 - 6) * 3$
4.  $8^2 - (6 * 3)$

**Question 3: Simplify the following expressions**

1.  $y = 4x + 3$  and  $y = 3 - 2x$
2.  $y = 3x^2 - 11x + 8$  and  $y = -4/x$
3.  $y = 2x - x/3$  and  $2y = 4$
4.  $y = 2x^2 - x/3$  and  $y = -2$
5.  $y = 3 - x$  and  $3y = 9 - 3x$
6.  $y = 2x - 3z + 4$  and  $y = x + 2z$

**Question 4: Factorise the following expressions**

1.  $x^2 - 3x + 2$
2.  $x^2 - 10x + 21$
3.  $x^2 + 4x - 12$
4.  $4x^2 - 9$
5.  $4x^2 + 9$

**Question 5: Solve the following without using a calculator. Round the solution to two decimal points**

1.  $2/7 + 3/7$
2.  $2/7 - 3/14$
3.  $1/5 + 3/4 - 5/2 + 7/8$
4.  $(1/5 + 3/4)*(-5/2 + 7/8)$
5.  $(1/5 - 3/4)*(-5/2 + 7/8)$

**Question 6: Evaluate the following algebraic equations**

1.  $(5x^2y + y^2) + (2x^2y + y)$
2.  $(5x^2y + y^2) - (2x^2y + y)$
3.  $(5x^2y + y^2)*(2x^2y + y)$
4.  $[-(5x^2y + y^2)]*[-(2x^2y + y)]$