# MATH 122

The following sets of three statements contain two truths and a lie. Your task is to determine which are truthful statements and which is the lie. Provide justification for your conjectures.

**Radicals**

A) $\sqrt{x^2+y^2}=\sqrt{x^2}+\sqrt{y^2}=x+y$

B) $\sqrt{\frac{36}{x^2}}=\frac{\sqrt{36}}{\sqrt{x^2}}=\frac{6}{x}$

C) $\sqrt{a^2b^2c^4d^8}=abc^2d^4$

**Simplification**

A) $\frac{x}{x(x-4)}=\frac{1}{x-4}$

B) $\frac{y}{a+b}=\frac{y}{a}+\frac{y}{b}$

C) $\frac{x+y}{b}=\frac{x}{b}+\frac{y}{b}$

**Exponents**

A) $x^5x^2=x^7$

B) $(a^2)^3=a^6$

C) $\frac{x^6y^4}{x^3y}=x^2y^4$

**Expanding Binomials**

A) $(x+2y)^2=x^2+4y^2$

B) $(2a+3b)^2=4a^2+12ab+9b^2$

C) $(-4x+1)^2=16x^2-8x+1$

**Sidework**

In order to be successful in throughout this course, your factoring skills need to be sharp. Factor the following expressions completely; simplify if possible.

1. $4x+8y+16z$

2. $3xy^2+6x^3y-15x^2$

3. $\dfrac{x^2+x}{x}$

4. $x^2-4$

5. $x^2+5x+6$

6. $x^2-2x-8$

7. $2x^2-5x-3$

8. $\dfrac{x^2-16}{2x^2+7x-4}$