Solutions

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

F A) $\sqrt{x^2+y^2} = \sqrt{x^2}+\sqrt{y^2} = x+y$ Can NOT split radicals over addition or subtraction!

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

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

Simplification

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

F B) $\frac{y}{a+b} = \frac{y}{a}+\frac{y}{b}$ $\frac{3}{1+2} \neq \frac{3}{1}+\frac{3}{2}$

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

Exponents

T A) $x^5x^2 = x^7$ Add exponents

T B) $(a^2)^3 = a^6$ Multiply exponents

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

↳ x^3y^3

Expanding Binomials

F A) $(x+2y)^2 = x^2+4y^2$ FOIL → $(x+2y)^2 = (x+2y)(x+2y)$

$= x^2+4xy+4y^2$

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

T 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. Work on factoring the following expressions in order to improve your skills.

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

$4(x+2y+4z)$

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

$3x(y^2+2x^2y-5x)$

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

$x+1$

4. x^2-4

$(x+2)(x-2)$

5. x^2+5x+6

$(x+3)(x+2)$

6. x^2-2x-8

$(x-4)(x+2)$

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

$(2x+1)(x-3)$

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

$\frac{(x+4)(x-4)}{(2x-1)(x+4)}$

$\frac{x-4}{2x-1}$