

Shalom's Homework - May 21, 2014

1. Expand and simplify (4 points)

$$4x(3x^2 + 5x^8) - 2x^3(1 - 5x^6)$$

2. Find the greatest common factor (GCF) and factor it out (4 points)

$$9x^2y^5 - 3x^3y^2$$

3. Test your answer to question 1 by “plugging in” a value for x ; ensure that you get the same result when x is plugged into the original equation and when x is plugged into the final, expanded and simplified equation (2 points)

Solutions

1.

$$\begin{aligned} & 4x(3x^2 + 5x^8) - 2x^3(1 - 5x^6) \\ = & 12x^3 + 20x^9 - 2x^3 + 10x^9 \\ = & (12x^3 - 2x^3) + (20x^9 + 10x^9) \\ = & 10x^3 + 30x^9 \end{aligned}$$

2. The GCF is $3x^2y^2$

$$\begin{aligned} & 9x^2y^5 - 3x^3y^2 \\ = & 3x^2y^2(3y^3 - x) \end{aligned}$$

3. Use $x = 2$.

Substitute $x = 2$ into the original equation:

$$\begin{aligned} & 4x(3x^2 + 5x^8) - 2x^3(1 - 5x^6) \\ = & 4(2)(3(2^2) + 5(2^8)) - 2(2^3)(1 - 5(2^6)) \\ = & 8(3(4) + 5(256)) - 2(8)(1 - 5(64)) \\ = & 8(12 + 1280) - 16(1 - 320) \\ = & 8(1292) - 16(-319) \\ = & 10336 - (-5104) \\ = & 10336 + 5104 \\ = & 15440 \end{aligned}$$

Substitute $x = 2$ into the final equation:

$$\begin{aligned} & 10x^3 + 30x^9 \\ = & 10(2^3) + 30(2^9) \\ = & 10(8) + 30(512) \\ = & 80 + 15360 \\ = & 15440 \end{aligned}$$

Since substituting $x = 2$ into the original equation and into the expanded and simplified equation evaluated to 15440, we can be fairly confident that the answer is correct. Had they come out to different values then we know for sure that a mistake was made somewhere.