Questions

1. Rewrite $-3x - 2y$ using a negative sign and parentheses.

2. Simplify $6x - 3(x - 2y)$.

3. Simplify $2x[4x^2 - 2(x - 3)]$.

4. Simplify $6a(2a^2 - 3a - 4) - a(a - 2)$.

5. Simplify $3a^2 - 4[2b - 3b(b + 2)]$.

6. Simplify $2\{3x^2 + 4[2x - (3 - x)]\}$.

7. Simplify $-4\{3a^2 - 2[4a^2 - (b + a^2)]\}$.

8. Simplify $-2\{x^2 - 3[x - (x - 2x^2)]\}$.

9. The base of an office building is in the shape of a trapezoid. The altitude is 400 ft, and the bases are 700 ft and 800 ft. What is the area of the base of the office building? If the base has a marble floor that costs \$55 per ft^2, what was the cost of the floor?

Solutions

1. $-3x - 2y = -(3x + 2y)$.

2.

$$
\begin{aligned}
6x - 3(x - 2y) &= 6x + (-3)(x) - (-3)(2y) \text{ distribute} \\
&= 6x - 3x + 6y \text{ simplify} \\
&= 3x + 6y \text{ simplify}
\end{aligned}
$$

3.

$$
\begin{aligned}
2x[4x^2 - 2(x - 3)] &= 2x[4x^2 - 2x + 6] \text{ distribute} \\
&= (2x)4x^2 - (2x)2x + (2x)6 \text{ distribute} \\
&= 8x^3 - 4x^2 + 12x \text{ simplify}
\end{aligned}
$$

4.

$$
\begin{aligned}
6a(2a^2 - 3a - 4) - a(a - 2) &= 12a^3 - 18a^2 - 24a - a^2 + 2a \\
&= 12a^3 \underset{\sim}{-18a^2} \underset{\sim}{-24a} \underset{\sim}{-a^2} \underset{\sim}{+2a} \\
&= 12a^3 - 19a^2 - 22a
\end{aligned}
$$

5.

$$
\begin{aligned}
3a^2 - 4[2b - 3b(b + 2)] &= 3a^2 - 8b + 12b(b + 2) \\
&= 3a^2 - 8b + 12b^2 + 24b \\
&= 3a^2 + 12b^2 + 16b
\end{aligned}
$$

6.

$$
\begin{aligned}
2\{3x^2 + 4[2x - (3 - x)]\} &= 6x^2 + 8[2x - (3 - x)] \text{ distribute the 2} \\
&= 6x^2 + 16x - 8(3 - x) \text{ distribute the 8} \\
&= 6x^2 + 16x - 24 + 8x \text{ distribute the } -8 \\
&= 6x^2 + 24x - 24 \text{ simplify}
\end{aligned}
$$

7.

$$-4\{3a^2 - 2[4a^2 - (b + a^2)]\} = -12a^2 + 8[4a^2 - (b + a^2)] \text{ distribute the } -4$$
$$= -12a^2 + 32a^2 - 8(b + a^2) \text{ distribute the } 8$$
$$= -12a^2 + 32a^2 - 8b - 8a^2 \text{ distribute the } -8$$
$$= 12a^2 - 8b \text{ simplify}$$

8.

$$-2\{x^2 - 3[x - (x - 2x^2)]\} = -2x^2 + 6[x - (x - 2x^2)] \text{ distribute the } -2$$
$$= -2x^2 + 6x - 6(x - 2x^2) \text{ distribute the } 6$$
$$= -2x^2 + 6x - 6x + 12x^2 \text{ distribute the } -6$$
$$= 10x^2 \text{ simplify}$$

9.

$$\text{Area of trapezoid} = \frac{1}{2}(\text{altitude})[(\text{base 1}) + (\text{base 2})]$$
$$= \frac{1}{2}(400\text{ft})(700\text{ft} + 800\text{ft})$$
$$= (200\text{ft})(1500\text{ft})$$
$$= 300,000\text{ft}^2$$
$$\text{Cost of marble floor} = (\text{area})(\text{cost per square ft})$$
$$= (300,000\text{ft}^2)(\$55\frac{1}{\text{ft}^2})$$
$$= \$16,500,000$$