Topic: Multiplying and dividing like terms

Question: Simplify the expression.

$$\frac{x(x + x + m + b)}{x}$$

Answer choices:

A $2x + m + b$

B $x^2 + mx + bx$

C $x^3 + mx^2 + bx^2$

D 1

Solution: A

We could expand the numerator, but before we do that we can cancel the x outside of the parentheses in the numerator against the x in the denominator.

$$\frac{x(x + x + m + b)}{x}$$

$$(x + x + m + b)$$

$$x + x + m + b$$

Now we just add like terms.

$$(1x + 1x) + m + b$$

$$2x + m + b$$

Topic: Multiplying and dividing like terms

Question: Simplify the expression.

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

Answer choices:

A $2x$

B 0

C $\dfrac{3x^2 + 4x^2 + 16}{x}$

D $2x^3 + x^2 + 7x - 4$

Solution: D

First, we'll expand the numerator.

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

$$\frac{4x^3 + 4x^2 + 16x - 2x^2 - 2x - 8}{2}$$

Next we'll group like terms in the numerator and then combine them. Remember, when we add or subtract terms, like terms are only those with the same base and the same exponent.

$$\frac{4x^3 + (4x^2 - 2x^2) + (16x - 2x) - 8}{2}$$

$$\frac{4x^3 + 2x^2 + 14x - 8}{2}$$

Since the coefficients of all the terms in the numerator are even, we'll be able to divide every term in the numerator and denominator by 2.

$$\frac{\frac{4}{2}x^3 + \frac{2}{2}x^2 + \frac{14}{2}x - \frac{8}{2}}{\frac{2}{2}}$$

$$\frac{2x^3 + 1x^2 + 7x - 4}{1}$$

$$2x^3 + x^2 + 7x - 4$$

Topic: Multiplying and dividing like terms

Question: Simplify the expression.

$$\frac{t^3 \cdot t^4 \cdot d^5}{t^5 \cdot d^4}$$

Answer choices:

A $\quad \dfrac{t^7}{d^4}$

B $\quad t^{12}d^9$

C $\quad \dfrac{t^2}{d}$

D $\quad t^2 d$

Solution: D

Start with

$$\frac{t^3 \cdot t^4 \cdot d^5}{t^5 \cdot d^4}$$

Add the exponents of the t terms in the numerator

$$\frac{t^{3+4}d^5}{t^5d^4}$$

$$\frac{t^7d^5}{t^5d^4}$$

Subtract the exponents of t and d

$$t^{7-5}d^{5-4}$$

$$t^2d$$