Topic: Multiplying polynomials

Question: Expand the expression.

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

Answer choices:

A $2x^2+5x+5$

B x^2+3x+2

C x^2+5x+6

D $x^2+x^2+3x+2x$

Solution: C

We'll use the FOIL method to expand this,

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

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

and then we'll simplify.

$$x^2 + 2x + 3x + 6$$

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

Topic: Multiplying polynomials

Question: Expand the expression.

$$2x(x-1)(x+3)(x-6)$$

Answer choices:

A $2x^4+16x^3-30x^2-12x$

B $2x^4-8x^3-30x^2-12x$

C $2x^4+16x^3-30x^2+36x$

D $2x^4-8x^3-30x^2+36x$

Solution: D

We'll start by distributing $2x$ across $(x-1)$.

$$2x(x-1)(x+3)(x-6)$$

$$(2x^2-2x)(x+3)(x-6)$$

Now we'll distribute $(2x^2-2x)$ across $(x+3)$.

$$(2x^3+6x^2-2x^2-6x)(x-6)$$

$$(2x^3+4x^2-6x)(x-6)$$

Finally, we'll distribute $(2x^3+4x^2-6x)$ across $(x-6)$.

$$2x^4-12x^3+4x^3-24x^2-6x^2+36x$$

$$2x^4-8x^3-30x^2+36x$$

Topic: Multiplying polynomials

Question: Simplify the expression.

$$(r-4)(r+3)(2r+5)$$

Answer choices:

A $2r^3 - 7r^2 - 19r - 60$

B $2r^3 + 3r^2 - 29r - 60$

C $2r^3 + 3r^2 - 19r - 60$

D $2r^3 - 7r^2 - 29r - 60$

Solution: B

We'll use the FOIL method on just the first two terms $(r-4)(r+3)$.

$$(r-4)(r+3)$$

$$r^2+3r-4r-12$$

$$r^2-r-12$$

Now we'll bring in the third binomial and multiply this result by $(2r+5)$.

$$(r^2-r-12)(2r+5)$$

$$r^2(2r)-r(2r)-12(2r)+r^2(5)-r(5)-12(5)$$

$$2r^3-2r^2-24r+5r^2-5r-60$$

$$2r^3+(-2+5)r^2+(-24-5)r-60$$

$$2r^3+3r^2-29r-60$$