

Brackets: Expanding

Example: $(x + 1)(x + 2)(x + 3)$

Questions

1. Expand and simplify

$$(x + 5)(x - 2)(x + 1)$$

2. Expand and simplify:

$$2(x - 3)(x - 4)$$

3. Expand and simplify:

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

Extension

[MAT 2002 1B]

Of the following three alleged algebraic identities, at least one is wrong.

$$(i) \quad yz(z - y) + zx(x - z) + xy(y - x) \\ = (z - y)(x - z)(y - x)$$

$$(ii) \quad yz(z - y) + zx(x - z) + xy(y - x) \\ = (z - y)(z - x)(y - x)$$

$$(iii) \quad yz(x + y) + zx(z + x) + xy(y + x) \\ = (z + y)(z + x)(y + x)$$

Which of the following statements are correct? Tick all that apply.

- (i)
- (ii)
- (iii)

[MAT 2007 1E]

If x and n are integers then

$$(1 - x)^n (2 - x)^{2n} (3 - x)^{3n} (4 - x)^{4n} (5 - x)^{5n}$$

is:

- negative when $n > 5$ and $x < 5$
- negative when n is odd and $x > 5$
- negative when n is a multiple of 3 and $x > 5$
- negative when n is even and $x < 5$