Exercise 8

Yes or No? If *No*, give a reason.

(a) Is the expression $(x^2)^3$ equal to x^5?

(b) Is the expression $(2x^4)^3$ equal to $2x^{12}$?

(c) Is the expression $\sqrt{4a^2}$ equal to $2a$?

(d) Is the expression $\sqrt{a^2+4}$ equal to $a+2$?

Solution

Evaluate the given expressions.

$$(x^2)^3 = x^{(2)(3)} = x^6$$

$$(2x^4)^3 = (2)^3(x^4)^3 = 2^3x^{(4)(3)} = 8x^{12}$$

$$\sqrt{4a^2} = \sqrt{(2a)^2} = |2a| = \pm 2a$$

$$\sqrt{a^2+4} = \sqrt{a^2+4}$$

(a) No

(b) No

(c) Yes, if a is nonnegative. Otherwise, no.

(d) Yes, if $a = 0$. Otherwise, no.