Three Properties of Exponents

If ***a*** and ***b*** are real numbers and ***m*** and ***n*** are positive integers, then:

$$a^m \cdot a^n = a^{m+n}$$

$$(ab)^m = a^m b^m$$

$$(a^m)^n = a^{mn}$$

Ex 1) Simplify:

1a) $(-7a^2b^4)(3ab^5)$

$-21a^3b^9$

1b) $(xy^2)^4$

$x^4(y^2)^4$

x^4y^8

1c) $(-y^2)^5$

$(-1)^5(y^2)^5$

$-y^{10}$

Ex 2) Simplify:

2a) $x^2 \cdot (x^4)^2 \cdot x$

$x^2 \cdot x^8 \cdot x$

x^{2+8+1}

x^{11}

2b) $(4ab^3c^2)^2$

$4^2 \cdot a^2 (b^3)^2 (c^2)^2$

$16a^2b^6c^4$

Ex 3) Simplify:

$$2x^2(x^3 - 3x^2 + 4x - 1)$$

$$2x^5 - 6x^4 + 8x^3 - 2x^2$$