

Find each product.

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

Answer: _____

2) $-9x(x^2 + 2x + 4)$

Answer: _____

3) $-6x^2(x^3 + 7x^2 - 4x + 3)$

Answer: _____

4) $x^3(-4x^3 + 10x^2 - 7x + 2)$

Answer: _____

5) $(x + 2)(y^2 + 2y - 12)$

Answer: _____

6) $(p + q)(4p^2 - p - 8q^2 - q)$

Answer: _____

Expand each expression.

7) $(3x - 1)^3$

Answer: _____

8) $(x - 4)^4$

Answer: _____

9) $3(a - 4b)^2$

10) $5(x^2 - 2y^3)^3$

Answer: _____

Answer: _____

11) A biologist has found that the number of branches on a certain rare tree in its first few years of life can be modeled by the polynomial $b(y) = 4y^2 + y$. The number of leaves on each branch can be modeled by the polynomial $l(y) = 2y^3 + 3y^2 + y$, where y is the number of years after the tree reaches a height of 6 feet. Write a polynomial describing the total number of leaves on the tree.

Answer: _____