

Determine whether the given binomial is a factor of the polynomial $P(x)$.

1. $(x - 4)$; $P(x) = x^2 + 8x - 48$

2. $(x + 5)$; $P(x) = 2x^2 - 6x - 1$

Factor each expression.

3. $2x^4 + 2x^3 - x^2 - x$

4. $4x^3 + x^2 - 8x - 2$

5. $5x^6 - 5x^4 + x^3 - x$

6. $2x^4 + 54x$

7. $64x^3 - 1$

8. $3x^4 + 24x$

9. Since 2006, the water level in a certain pond has been modeled by the polynomial $d(x) = -x^3 + 16x^2 - 74x + 140$, where the depth d , is measured in feet over x years. Identify the year that the pond will dry up. Use the graph to factor $d(x)$.

