KEY

Solving Polynomials by Factoring #2

Solve the polynomial by factoring. Check the solutions by graphing.

1) $x^3 + x^2 - 9x - 9$ $x = \pm 3, -1$

2) $x^3 + x^2 - 6x$ $x = 0, -3, 2$

3) $x^3 + 7x^2 + 2x + 14$ $x = -7, \pm i\sqrt{2}$

4) $2x^4 - 54x$ $x = 0, 3, \frac{-3 \pm 3i\sqrt{3}}{2}$

① $x^2(x+1) - 9(x+1)$

$(x^2 - 9)(x+1)$

② $x(x^2 + x - 6)$

$x(x+3)(x-2)$

③ $x^2(x+7) + 2(x+7)$

$(x^2 + 2)(x+7)$

④ $2x(x^3 - 27)$

$2x(x-3)(x^2 + 3x + 9)$

$\frac{-3 \pm \sqrt{3^2 - 4(1)(9)}}{2}$

$\frac{-3 \pm \sqrt{-27}}{2}$

$\frac{-3 \pm 3i\sqrt{3}}{2}$