Factoring Challenge

MATH MONKS

Simplify the given polynomials by factoring.

1. $3x^4 - 11x^2 - 20$

2. $16x^2 + 56xy + 49y^2$

3. $x^2y^4 - x^6$

4. $x^3 + x^2 - x - 1$

5. $100x^4 - 120x^2 + 36$

6. $16x^3 - 6x^2 - 8x + 3$

Solve the given quadratic equations by factoring.

7. $6x^2 - 13x + 3 = -3$

8. $7x^2 + 2x = 0$

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Answers

1. $3x^4 - 11x^2 - 20$

$(3x^2 + 4)(x^2 - 5)$

2. $16x^2 + 56xy + 49y^2$

$(4x + 7y)^2$

3. $x^2y^4 - x^6$

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

4. $x^3 + x^2 - x - 1$

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

5. $100x^4 - 120x^2 + 36$

$4(5x^2 - 3)^2$

6. $16x^3 - 6x^2 - 8x + 3$

$(2x^2 - 1)(8x - 3)$

7. $6x^2 - 13x + 3 = -3$

$\left\{\frac{2}{3}, \frac{3}{2}\right\}$

8. $7x^2 + 2x = 0$

$\left\{-\frac{2}{7}, 0\right\}$