



Finding rational roots of a polynomial

Name _____ Date _____

Using algorithm of testing rational roots find all roots of a polynomial, and represent a factorized form of the polynomial.

(1) $4x^4 - 56x^3 + 183x^2 - 182x + 30$

(2) $2x^4 - 15x^3 + 43x^2 - 55x + 25$

(3) $3x^4 - 35x^3 + 103x^2 - 9x - 30$

(4) $4x^4 - 60x^3 + 217x^2 - 190x - 21$

(5) $3x^4 - 52x^3 + 149x^2 - 62x + 6$

(6) $2x^4 - 9x^3 + 15x^2 - 11x + 3$

(7) $2x^4 - 19x^3 + 58x^2 - 71x + 30$

(8) $4x^4 - 28x^3 + 61x^2 - 44x + 10$

(9) $4x^4 - 40x^3 + 103x^2 - 58x - 30$

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



Answers

Using algorithm of testing rational roots find all roots of a polynomial, and represent a factorized form of the polynomial.

<i>Roots</i>	<i>Factorized form</i>
(1) $\frac{3}{2}, \frac{5}{2}, 5 - \sqrt{23}, 5 + \sqrt{23}$	$(2x - 3)(2x - 5)(x^2 - 10x + 2)$
(2) $1, \frac{5}{2}$	$(x - 1)(2x - 5)(x^2 - 4x + 5)$
(3) $\frac{2}{3}, 5, 3 - \sqrt{12}, 3 + \sqrt{12}$	$(3x - 2)(x - 5)(x^2 - 6x - 3)$
(4) $\frac{3}{2}, \frac{7}{2}, 5 - \sqrt{26}, 5 + \sqrt{26}$	$(2x - 3)(2x - 7)(x^2 - 10x - 1)$
(5) $\frac{1}{3}, 3, 7 - \sqrt{47}, 7 + \sqrt{47}$	$(3x - 1)(x - 3)(x^2 - 14x + 2)$
(6) $\frac{3}{2}, 1, 1$	$(2x - 3)(x - 1)(x^2 - 2x + 1)$
(7) $2, \frac{3}{2}, 3 - \sqrt{4}, 3 + \sqrt{4}$	$(x - 2)(2x - 3)(x^2 - 6x + 5)$
(8) $\frac{1}{2}, \frac{5}{2}, 2 - \sqrt{2}, 2 + \sqrt{2}$	$(2x - 1)(2x - 5)(x^2 - 4x + 2)$
(9) $\frac{5}{2}, \frac{3}{2}, 3 - \sqrt{11}, 3 + \sqrt{11}$	$(2x - 5)(2x - 3)(x^2 - 6x - 2)$
(10) $1, 2 - \sqrt{7}, 2 + \sqrt{7}$	$(x - 1)^2(x^2 - 4x - 3)$