

We will review the rational root theorem and solving rational equations.

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$$9) \quad 8x^2 - 13x - 6$$

$$(8x + 3)(x - 2)$$

$$\begin{array}{cccc} 8x & 2 & 1x & 3 \\ \hline \end{array}$$

$$\begin{array}{cccc} 4x & 1 & 2x & 6 \\ \hline \end{array}$$

$$\bullet \begin{array}{cccc} 8x & 3 & 1x & 2 \\ \hline \end{array}$$

$$\begin{array}{cccc} 4x & 6 & 2x & 1 \\ \hline \end{array}$$

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$$8x^2 - 13x - 6$$

$$8 \times 6 = 48$$

	^	
48	1	
24	2	
-16	3	
12	4	
8	6	

$$\left(\frac{8x}{8} - \frac{16}{8} \right) (8x + 3)$$

$$(x - 2)(8x + 3)$$

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factor: $2x^2 + 11x + 14$

	<u>28</u>
1 + 28	
2 + 14	
4 + 7	

$$\left(\frac{2x}{2} + \frac{4}{2} \right) (2x + 7)$$

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

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factor $2x^2 + 11x + 14$

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

1	14
14	1
2	7
7	2

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12) $2d^3 - 50d$

$$\underline{2}ddd - \underline{2} \cdot \underline{5} \cdot \underline{5} \cdot \underline{d}$$

$$2d (dd - 5 \cdot 5)$$

$$2d (d-5)(d+5)$$

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$$16) \quad 64x^3 - y^3$$

difference of two Cubes

$$(4x - y)(16x^2 + 4xy + y^2)$$

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$$8x^3 - 1 = 2^3x^3 - 1^3$$

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

$$8x^3 + 1$$

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

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Rational Root Theorem

Make a list of possible rational roots by dividing the factors of the constant by the factors of the leading coefficient

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Rational Root Theorem

$$4x^3 + 2x^2 - 4x + 9$$

$$\frac{\pm 1, 3, 9}{\pm 1, 2, 4} = \pm \left\{ 1, \frac{1}{2}, \frac{1}{4}, 3, \frac{3}{2}, \frac{3}{4}, 9, \frac{9}{2}, \frac{9}{4} \right\}$$

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Rational Root Theorem

List ALL possible Rational Roots

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

$$\pm \frac{1, 3}{1, 2, 4} = \pm \left\{ 1, \frac{1}{2}, \frac{1}{4}, 3, \frac{3}{2}, \frac{3}{4} \right\}$$

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Solving Rational Equations

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