

Finding Real Roots Given an Equation (Use your Graphing Calculator)

1. $y = x^3 + 3x^2 - 16x - 48$

Leading coefficient: 1

Total number of roots: 3

of Real Roots: 3

of Imaginary Roots: 0

Find the Real Roots using your calculator: $x = -4, x = -3, x = 4$ # of Relative Min: 1 Find them (you may have to adjust your window): $(1.517, -61.877)$ # of Relative Max: 1 Find them (you may have to adjust your window): $(-3.517, 1.877)$

2. $y = -.8x^4 + 2.8x^3 + 18.8x^2 - 32.8x - 48$

Leading coefficient: $-.8$

Total number of roots: 4

of Real Roots: 4

of Imaginary Roots: 0

Find the Real Roots using your calculator: $x = -4, x = -1, x = 2.5, x = 6$ # of Relative Min: 1 Find them (you may have to adjust your window): $(-.777, -81.1147)$ # of Relative Max: 2 Find them (you may have to adjust your window): $(-2.823, 80.617)$
 $(4.671, 113.502)$

3. $y = .5x^4 - 2.75x^3 - 5.5x^2 - 24.75x - 90$

Leading coefficient: $.5$

Total number of roots: 4

of Real Roots: 2

of Imaginary Roots: 2

Find the Real Roots using your calculator: $x = -2.5, x = 8$

4. $y = -x^3 + 3.25x^2 - 2x + 6.5$

Leading coefficient: -1

Total number of roots: 3

of Real Roots: 1

of Imaginary Roots: 2

Find the Real Roots using your calculator: $X = 3.25$

of Relative Min: 1 Find them (you may have to adjust your window): $(.371, 6.154)$

of Relative Max: 1 Find them (you may have to adjust your window): $(1.795, 7.598)$

5. $y = .25x^4 + .45x^3 - 3.17x^2 + 2.25x - 22.1$

Leading coefficient: $.25$

Total number of roots: 4

of Real Roots: 2

of Imaginary Roots: 2

Find the Real Roots using your calculator: $X = -5.2, X = 3.4$ $(1.657, -23.144)$

of Relative Min: 2 Find them (you may have to adjust your window): $(-3.406, -50.674)$

of Relative Max: 1 Find them (you may have to adjust your window): $(.399, -21.672)$

6. $y = -.02x^5 + .109x^4 + .733x^3 - .9168x^2 + .753x - 1.026$

Leading coefficient: $-.02$

Total number of roots: 5

of Real Roots: 3

of Imaginary Roots: 2

Find the Real Roots using your calculator: $X = -4.750, X = 1.200$

double
root

7. $y = (x+1)^2(x-7)$
 $y = x^3 - 5x^2 - 13x - 7$