

For the following polynomials, find ALL roots (rational, irrational and imaginary). Remember to try the easier methods first (GCF, AC factoring, grouping, etc). If none of these factoring methods works, then please use the rational root theorem to find all possible roots (this work MUST be shown). Once you have all possible roots, you may use the calculator to confirm the rational roots. You must then use synthetic or long division to prove each of the roots. Again, this work must be shown. Finally, write the polynomial in factored form in answer blank.

1. $h(x) = x^3 + 3x^2 - 25x + 21$

2. $h(x) = 6x^3 + 11x^2 - 3x - 2$

3. $g(x) = 9x^5 - 94x^3 + 27x^2 + 40x - 12$

4. $f(x) = 6x^3 + 5x^2 - 9x + 2$

5. $d(x) = 6x^4 + 22x^3 + 11x^2 - 38x - 40$

6. $p(x) = 5x^4 - 29x^3 + 55x^2 - 28x$

7. $g(x) = x^5 - 4x^4 - 2x^3 + 4x^2 + x$

8. Write three polynomials that all have the following zeros: -3, 2 and 5

_____, _____, _____

9. Write the polynomial of least degree with the following zeros:
- $\frac{1}{2}$
- ,
- $\frac{3-\sqrt{2}}{2}$
