1. Factor the polynomial below completely, knowing that $x-3$ is a factor. *To make the problem easier, all zeros are between -5 and 5.*

$$f(x) = 20x^4 - 133x^3 + 93x^2 + 333x + 135$$

2. Factor the polynomial below completely. *To make the problem easier, all zeros are between -5 and 5.*

$$f(x) = 4x^3 - 24x^2 + 5x + 75$$

3. Factor the polynomial below completely, knowing that $x-4$ is a factor. *To make the problem easier, all zeros are between -5 and 5.*

$$f(x) = 8x^4 + 30x^3 - 123x^2 - 425x - 300$$

4. Perform the division below. Write the resulting quotient in the form $ax^2 + bx + c$ and remainder as r.

$$\frac{6x^3 - 18x - 10}{x - 2}$$

5. Perform the division below. Write the resulting quotient in the form $ax^2 + bx + c$ and remainder as r.

$$\frac{25x^3 - 85x^2 - 184x - 82}{x - 5}$$

6. Perform the division below. Write the resulting quotient in the form $ax^2 + bx + c$ and remainder as r.

$$\frac{12x^3 - 65x^2 + 127}{x - 5}$$

7. What are the *possible Integer* roots of the polynomial below?

$$f(x) = 4x^4 + 6x^3 + 6x^2 + 7x + 6$$

8. What are the *possible Rational* roots of the polynomial below?

$$f(x) = 2x^2 + 2x + 3$$

9. Perform the division below. Write the resulting quotient in the form $ax^2 + bx + c$ and remainder as r.

$$\frac{15x^3 + 21x^2 - 24x - 16}{x + 2}$$

10. Factor the polynomial below completely. *To make the problem easier, all zeros are between -5 and 5.*

$$f(x) = 16x^3 + 40x^2 - 39x - 45$$