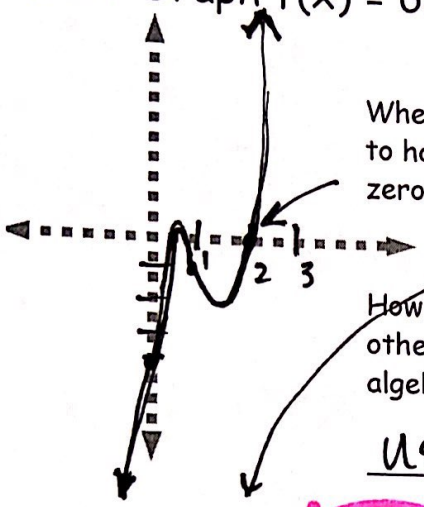
2.3a Real Zeros of Polynomial Functions

Ex 1: Graph $f(x) = 6x^3 - 19x^2 + 16x - 4$



Where does it appear to have a whole number zero? $x = 2$ or $(2, 0)$

How can we find the other two zero values algebraically?

use long division

Divide $6x^3 - 19x^2 + 16x - 4$ by $x - 2$, then use the result to factor the polynomial completely.

$$x-2 \;\overline{)\; 6x^3 - 19x^2 + 16x - 4}$$

$6x^2 - 7x + 2$

$-6x^3 \pm 12x^2$ ↓

$-7x^2 + 16x$

$\mp 7x^2 \mp 14x$ ↓

$2x - 4$

$-2x \pm 4$

0

$f(x) = (x-2) \cdot q(x)$

no power of 2 *oops!*

Let's use long division to find q(x)!

now factor $6x^2 - 7x + 2$

$(2x-1)(3x-2)$