HW: pg. 239 # 3, 4, 6-13, 15

14.2 (Some) Key Features of Polynomial Functions

Polynomials

Have various terms that are #$x^{\#}$ & possibly a constant.

$$7x^5 + 2x^2 - 3$$

$7x^5$: leading term (because it has the highest exponent on the variable)

-3: constant

leading coefficient: 7 degree: 5 (highest power)

Key Features of Polynomials

leading coefficient tells you how the right side of graph ends

- positive → right goes up
- negative → right goes down

degree tells you the max # of x-int & how left side ends

- even → left is same as right
- odd → left is opposite as right

constant is the y-int

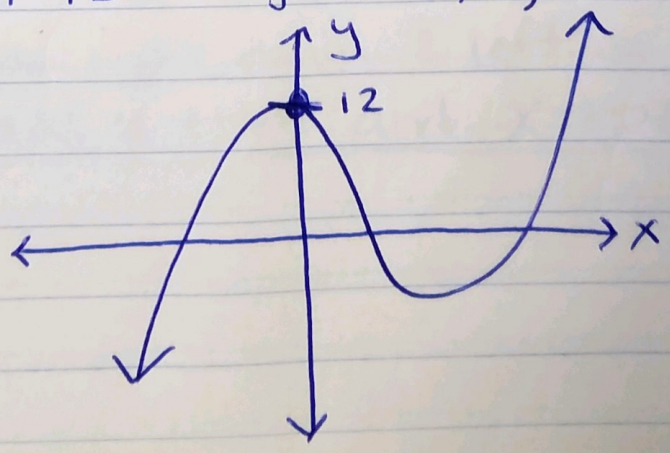
Ex #1 With the knowledge you have, make a rough sketch of the following:

a) $f(x) = 2x^3 - 5x^2 - 4x + 12$

leading coeff: 2 — right side up

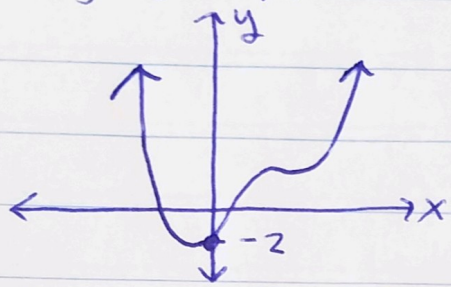
degree: 3 — left (opposite) down & max of 3 x-int

constant: 12 — y-int (0, 12)

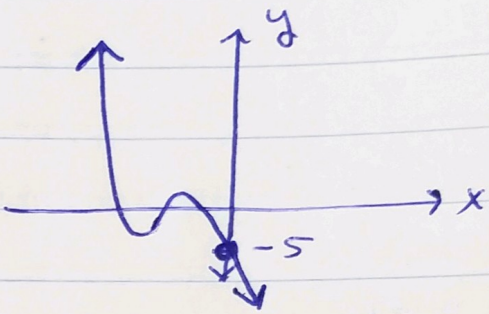


b) $f(x) = 1x^4 + x^2 - 3x - 2$

right goes up, max 4 x-int & left goes up, y-int $(0, -2)$



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



End Behavior

A way to write how the graph ends on the left/right.

$x \to \infty$	"as x approaches ∞"	right side of graph
$x \to -\infty$	"as x approaches $-\infty$"	left side of graph
$y \to \infty$	"y approaches ∞"	goes up
$y \to -\infty$	"y approaches $-\infty$"	goes down

Ex #2 Describe the end behavior:

a) $f(x) = 1x^6 - 2x^3 + 3x^2 + 2$

Know: right goes up & left goes up

$x \to \infty, y \to \infty$ and $x \to -\infty, y \to \infty$

b) $f(x) = -\frac{2}{3}x^3 - 8x^2 - 2x + 7$

Know: right down & left up

$x \to \infty, y \to -\infty$ and $x \to -\infty, y \to \infty$