VD Unit 2 Topic 2
Sketch the following polynomials.

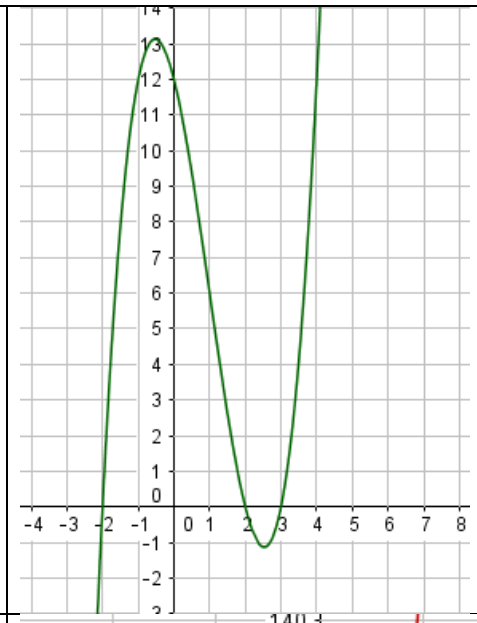
1. With analysis of the ending behavior and

2. details of the function around zeros

$f(x)=(x-2)(x^2-4)-(x^2-4)$

ending behaviors:
$x\to\infty,\ f\to\infty$
$x\to-\infty,\ f\to-\infty$

analysis around zeros:
@ $x=-2$, $x=2$, $x=3$, $f(x)$ crosses x-axis

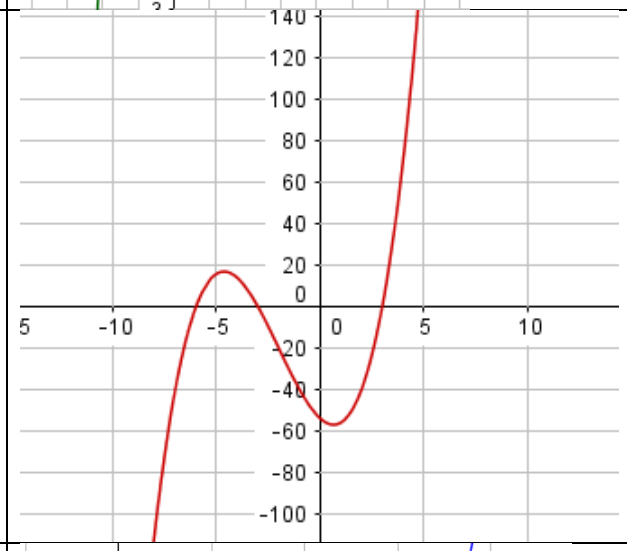


$f(x)=x^3+6x^2-9x-54$

ending behaviors:
$x\to\infty,\ f\to\infty$
$x\to-\infty,\ f\to-\infty$

Analysis around zeros

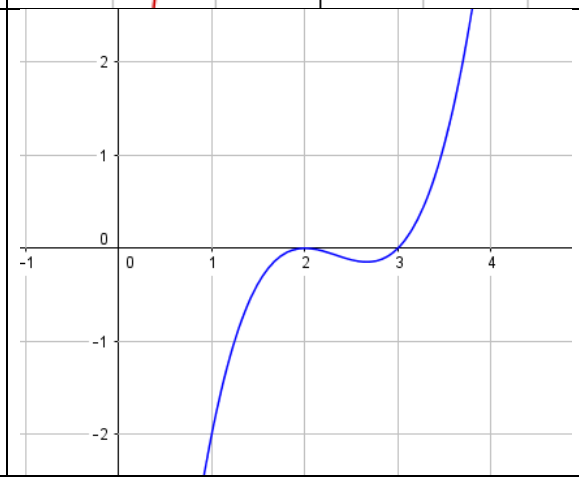
@ $x=-6, x=-3, x=3$ $f(x)$ crosses x-axis



$f(x)=(x^2-5x+4)(x-2)+2(x-2)$
ending behaviors:
$x\to\infty,\ f\to\infty$
$x\to-\infty,\ f\to-\infty$

Analysis around zeros

@ $x=2$ $f(x)$ touches x-axis
@ $x=3$ $f(x)$ crosses x-axis



VD Unit 2 Topic 2

$f(x)=(x+2)(2x^2-x-6)-x^2(x^2-4)$

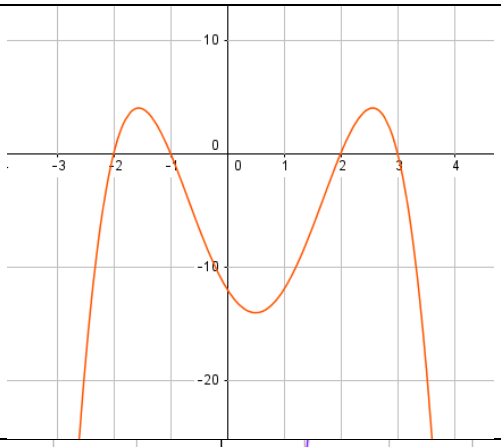
ending behaviors:

$x\to\infty,\ f\to-\infty$

$x\to-\infty,\ f\to-\infty$

Analysis around zeros

@ $x=-2, x=-1, x=2, x=3$ $f(x)$ crosses x-axis



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

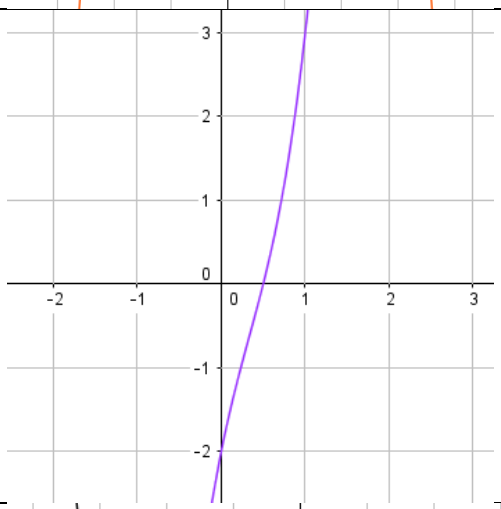
ending behaviors:

$x\to\infty,\ f\to\infty$

$x\to-\infty,\ f\to-\infty$

Analysis around zeros

@ $x=\frac{1}{2}$ $f(x)$ crosses x-axis



$f(x)=(x^2-3x+2)(2x-1)-(6x^2+7x-5)(x-2)$

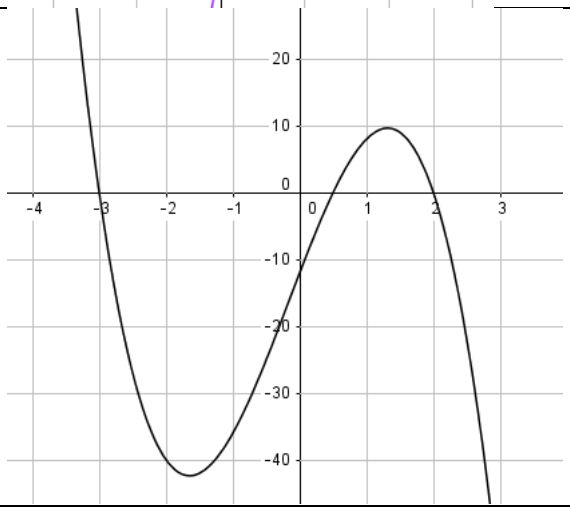
ending behaviors:

$x\to\infty,\ f\to-\infty$

$x\to-\infty,\ f\to\infty$

Analysis around zeros

@ $x=-3, x=\frac{1}{2}, x=2$ $f(x)$ crosses x-axis



VD Unit 2 Topic 2

$f(x)=(x^2-x-2)(3x^2-x)+(x+1)(3x^2-7x+2)$

ending behaviors:

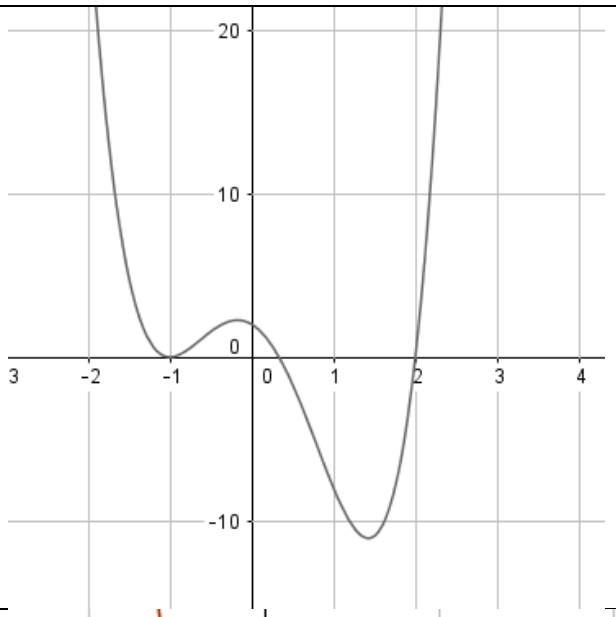
$x\to\infty,\ f\to\infty$

$x\to-\infty,\ f\to\infty$

zero analysis:

@ $x=-1$ $f(x)$ touches x-axis

@ $x=\frac{1}{3}, x=2$ $f(x)$ crosses x-axis



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

ending behaviors:

$x\to\infty,\ f\to\infty$

$x\to-\infty,\ f\to\infty$

zero analysis:

@ $x=0, x=1$ $f(x)$ crosses x-axis