① $f(x) = (x-7)(3x+1)(x+4)$

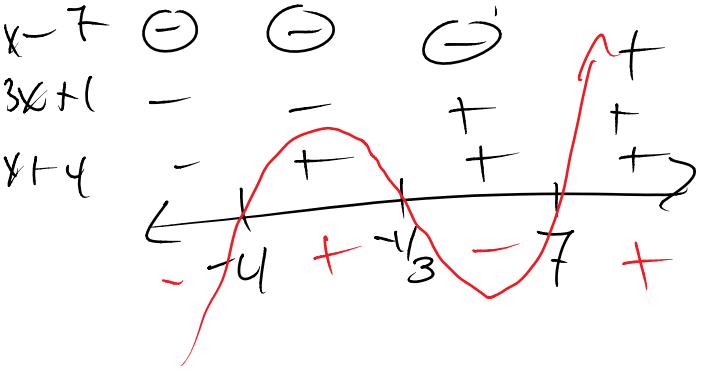
$3x^3$

Zero: $4, 7, -1/3$

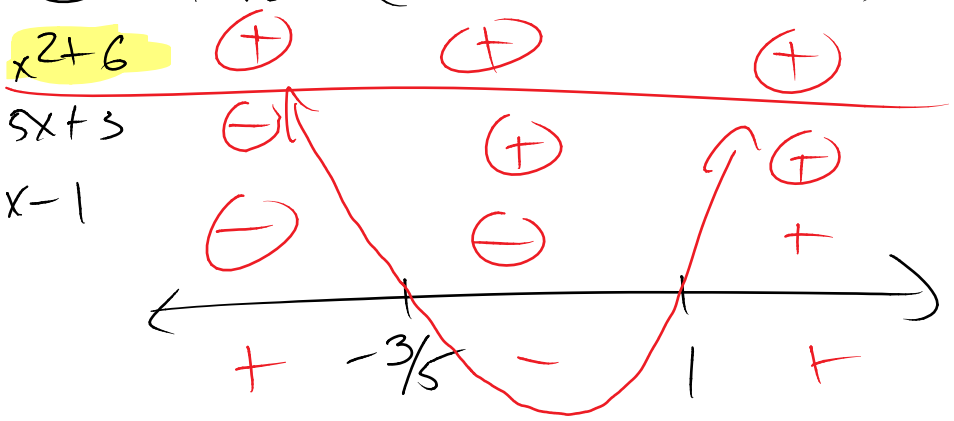
Undefined: $\times$

Positive: $(-4, -1/3) \cup (7, \infty)$

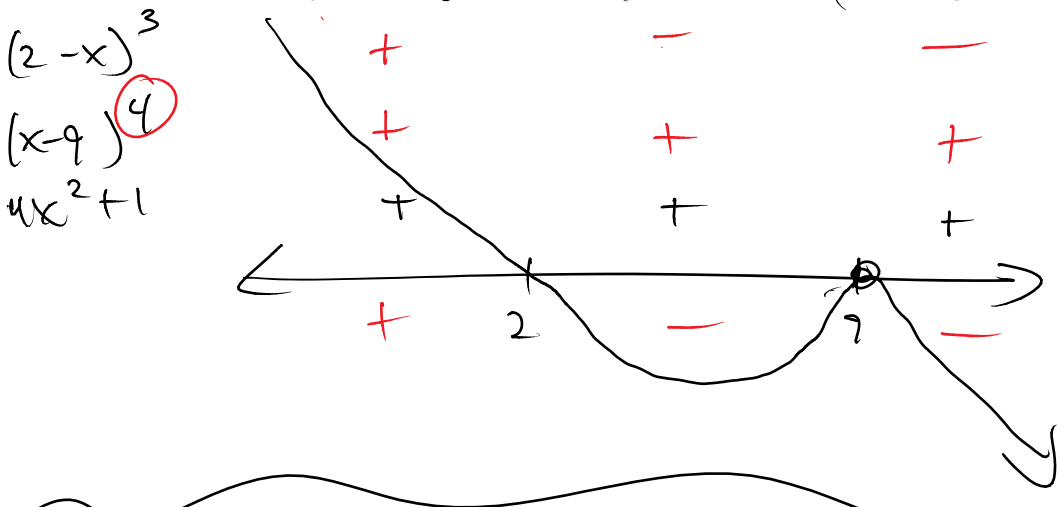
Negative: $(-\infty, -4) \cup (-1/3, 7)$



② $f(x) = (5x+3)(x^2+6)(x-1)$

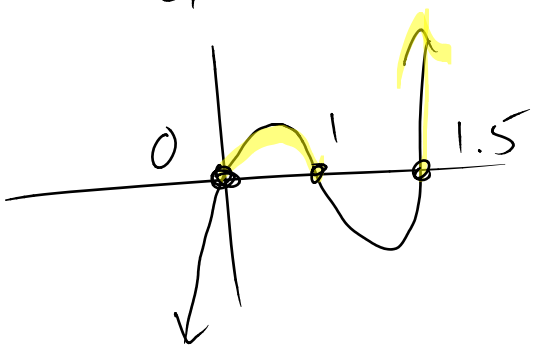


③ $f(x) = (2-x)^3(4x^2+1)(x-9)^4$



④ $\underbrace{2x^3 - 5x^2 + 3x}_{4.} \geq 0$

$[0, 1] \cup [1.5, \infty)$



Solving Rational Inequalities

① $\dfrac{2x+1}{(x+3)(x-1)} \geq 0$

$\dfrac{-}{-\cdot-} = \dfrac{-}{+}$

	-3	$-\frac{1}{2}$	1
$2x+1$	$-$	$+$	$+$
$x+3$	$+$	$+$	$+$
$x-1$	$-$	$-$	$+$
	$-$	$+$	$-$	$+$

$(-3, -\frac{1}{2}] \cup (1, \infty)$

★ 1. Denom $\neq 0$

2. $\sqrt{\square} \geq 0$

② $\dfrac{(x+1)(x-1)}{\sqrt{x+3}} \leq 0$

$x+3 > 0$

$x > -3$

	-3	-1	1
$(x+1)$	$-$	$+$	$+$
$(x-1)$	$-$	$-$	$+$
$\sqrt{x+3}$	$+$	$+$	$+$
	$+$	$-$	$+$	$+$

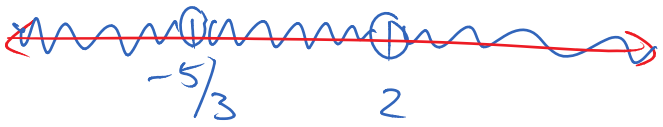
$[-1, 1]$

③ $(3x+5)^2 |x-2| > 0$

$(3x+5)^2$	$+$	$+$	$+$
$\lvert x-2 \rvert$	$+$	$+$	$+$

$(-\infty, -\frac{5}{3}) \cup (-\frac{5}{3}, 2) \cup (2, \infty)$

$|x-2|$ + + +



$x \neq -5/3, 2$

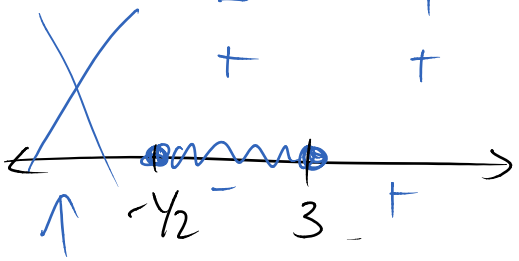
(4) $(x-3)\sqrt{2x+1} \leq 0$

$2x+1 \geq 0$

$x \geq -1/2$

$x-3$ | − +

$\sqrt{2x+1}$ | + +



$[-1/2, 3]$