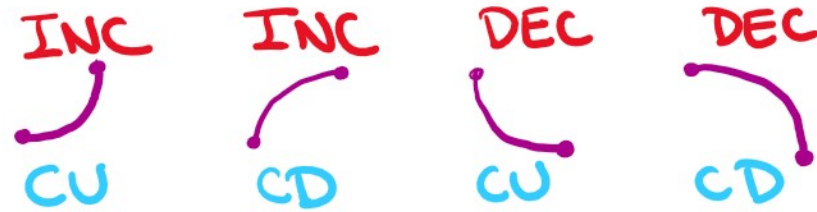


5.4 Sketching Graphs

Wednesday, June 12, 2019 7:14 AM

- ① Plot all known points (max/min/POI)
- ② Lightly draw the INC/DEC sections
- ③ Replace straight lines from Step 2 with smooth curves making sure to adhere to the concavity identified in 2nd Deriv. - Test



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

$$f'(x) = 3x^2 - 3$$

Critical: $x = -1$
Points: $x = 1$

$$3x^2 - 3 = 0$$

$$3(x^2 - 1) = 0$$

$$3(x+1)(x-1) = 0$$

$$x = -1 \quad x = 1$$

$$f''(x) = 6x \quad 6x = 0$$

Critical: $x = 0$
Points

Int.	$(-\infty, -1)$	$(-1, 1)$	$(1, \infty)$
TV	-2	0	2
$f'(x)$	+	-	+
I/D	INC	DEC	INC

Rel Max: $(-1, 4)$
Rel Min: $(1, 0)$

Abs Max = none
Rel. Max = $(-1, 4)$
Abs Min = none
Rel Min = $(1, 0)$

Int.	$(-\infty, 0)$	$(0, \infty)$
TV	-4	1
$f''(x)$	-	+
CU/CD	CD	CU

$(0, 2)$ POI

$$POI = (0, 2)$$

