

## More Curve Sketching

1. Sketch a curve that satisfies the following conditions:

$$\frac{dy}{dx} > 0 \text{ on } (-\infty, 0) \text{ and } (2, +\infty)$$

$$\frac{dy}{dx} < 0 \text{ on } (0, 2)$$



$$\frac{d^2y}{dx^2} > 0 \text{ on } (1, +\infty)$$

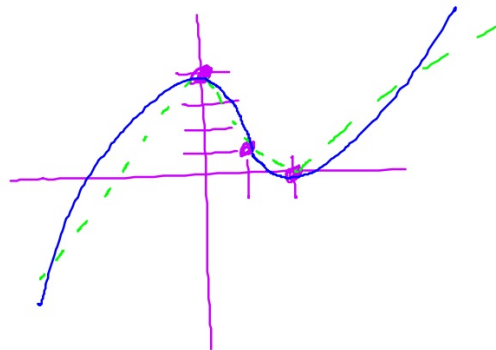
$$\frac{d^2y}{dx^2} < 0 \text{ on } (-\infty, 1)$$



$$f(0) = 4$$

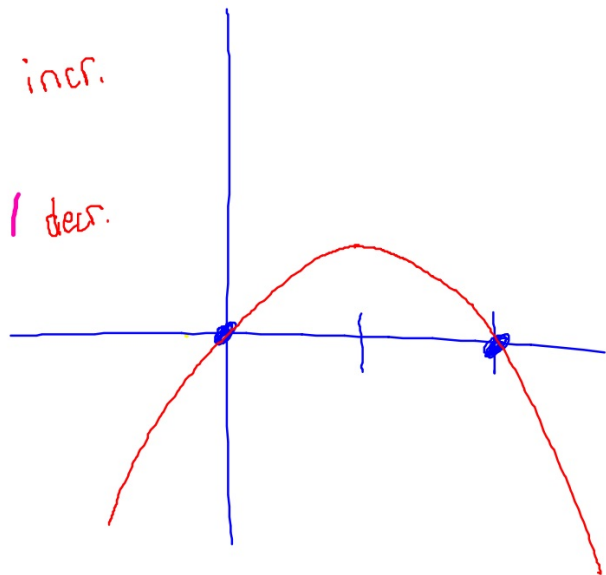
$$f(2) = 0$$

$$f(1) = 1$$



$$f(0) = f(2) = 0$$

- $f'(x) > 0$  if  $x < 1$  incr.
- $f'(1) = 0$
- $f'(x) < 0$  if  $x > 1$  decr.
- $f''(x) < 0$  CCD



$f(x)$  is continuous

| $x$      | $x < -4$ | $x = -4$       | $-4 < x < 4$ | $x = 4$ | $x > 4$  |
|----------|----------|----------------|--------------|---------|----------|
| $f'(x)$  | Positive | fails to exist | negative     | 0       | negative |
| $f''(x)$ | Positive | fails to exist | positive     | 0       | negative |

*un*

