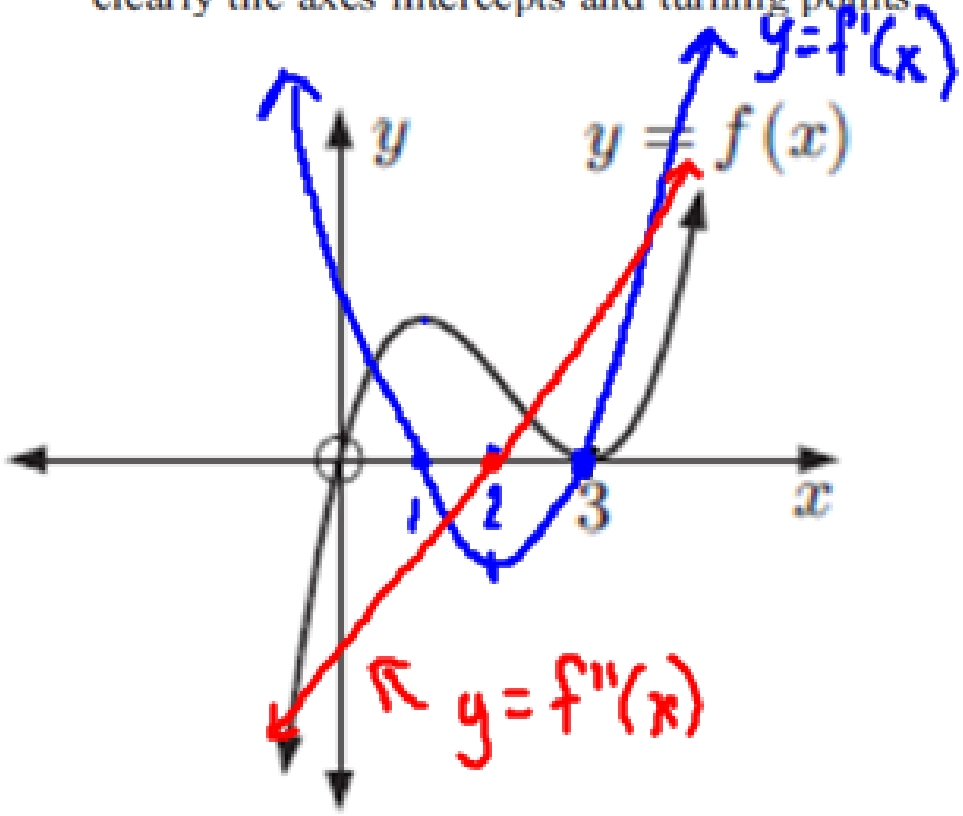
EXERCISE 16D.2

1 Using the graphs of $y = f(x)$ below, sketch the graphs of $y = f'(x)$ and $y = f''(x)$. Show clearly the axes intercepts and turning points.



Power Rule $y = x^n$

$y' = n \cdot x^{n-1}$

$y'' = n(n-1)x^{n-2}$

$y = f(x)$ is cubic

y' is Quadratic

y'' is linear

- $f'(x)$ slopes of tangent lines
- local max/min of $f(x)$ are the intercepts of the graph of $f'(x)$

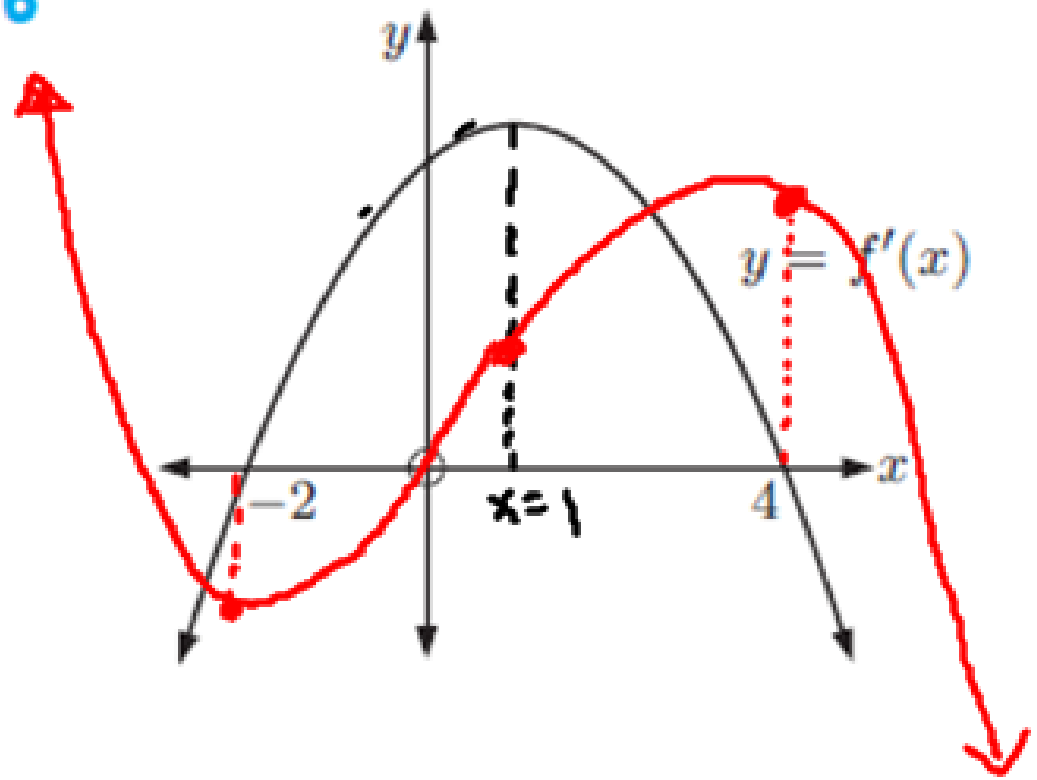
Slopes of the tangents for $f'(x)$ will show where function is curved

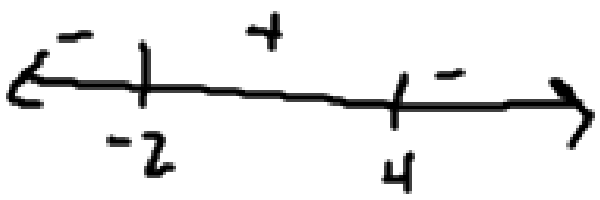
the x-int of $f''(x)$ is where $f'(x) = 0$

Inflexion pt.

2 For the graphs of $y = f'(x)$ below, sketch a graph which could be $y = f(x)$. Show clearly the location of any stationary points and points of inflection.

b





f'(x) is quadratic

f(x) will be cubic

→ x-int of derivative function will tell us local max/min values

x = -2 local min

x = 4 local max

→ vertex of f'(x) will tell us inflexion pt

x=1 will be an inf. pt

$x \in (-\infty, 1)$ CU

$x \in (1, \infty)$ CD

HW: Finish the questions in ch 16D
PROBE NEXT CLASS
ICA MOVED TO MONAY & TUESDAY