

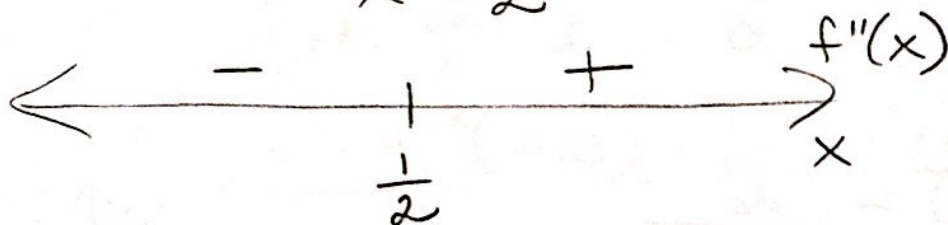
Ex 1) Find points of inflection and discuss concavity.

\* a)  $f(x) = 2x^3 - 3x^2 - 12x + 5$

$$f'(x) = 6x^2 - 6x - 12$$

$$f''(x) = 12x - 6 = 0$$

$$x = \frac{1}{2}$$



CC  $\uparrow$  :  $(\frac{1}{2}, \infty)$       POI :  $(\frac{1}{2}, -\frac{3}{2})$

CC  $\downarrow$  :  $(-\infty, \frac{1}{2})$

b)  $f(x) = \sin x + \cos x$  on  $[0, 2\pi]$

$$f'(x) = \cos x - \sin x$$

$$f''(x) = -\sin x - \cos x = 0$$

$$-\sin x = \cos x$$

$$x = \frac{3\pi}{4}, \frac{7\pi}{4}$$

$$\left(\sin \frac{3\pi}{4} + \cos \frac{3\pi}{4}\right)$$

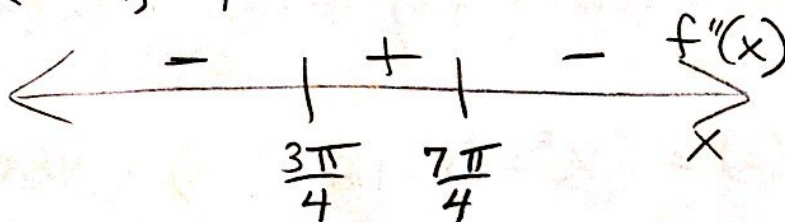
$$\hookrightarrow \frac{\sqrt{2}}{2} + \frac{-\sqrt{2}}{2}$$

$$\left(\sin \frac{7\pi}{4} + \cos \frac{7\pi}{4}\right)$$

$$\hookrightarrow -\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}$$

\* 

S	A
T	C*



CC  $\uparrow$  :  $(\frac{3\pi}{4}, \frac{7\pi}{4})$

POI :  $x = (\frac{3\pi}{4}, 0)$

CC  $\downarrow$  :  $(0, \frac{3\pi}{4}) \cup (\frac{7\pi}{4}, 2\pi)$

$x = (\frac{7\pi}{4}, 0)$