1 D C D B B

2 (1) 0 (2) $y=0$ $y=2x$ (3) $(\frac{7}{8})^{\frac{4}{3}}$ $\frac{7\sqrt{7}}{16}$

(4) $2+2\sqrt{3}-\frac{\pi}{3}$ (5) $\frac{1}{16\sqrt{3}}$ $(\frac{\sqrt{3}}{48})$

3 $y=\frac{1}{4}x-\frac{5}{4}$

4 $\frac{dy}{dx}=\int_2^{x^2}\sin(t^3)dt+2x^2\sin x^6$

5 $a=b=\frac{1}{2}$

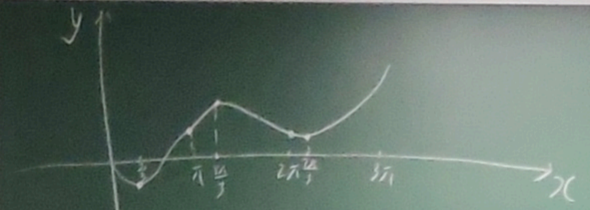
6 (a) local minima $f(\frac{\pi}{3})=\frac{\pi}{6}-\frac{\sqrt{3}}{2}$ $f(\frac{7\pi}{3})=\frac{7\pi}{6}-\frac{\sqrt{3}}{2}$

local maximum $f(\frac{5\pi}{3})=\frac{5\pi}{6}+\frac{\sqrt{3}}{2}$

(b) concave up $(0,\pi)$, $(2\pi,3\pi)$

concave down $(\pi,2\pi)$

7 $\frac{1}{2}$



8 $f(0)=1$ $f'(0)=1$

$f'(x)=f(x)$