

HW 2

$$1.5 \#1 \quad \tan\left(-\frac{\pi}{3}\right) = -\tan\left(\frac{\pi}{3}\right) = -\frac{\sin\frac{\pi}{3}}{\cos\frac{\pi}{3}} = -\frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = -\sqrt{3}$$

$$\#5 \quad f(x) = 2\cos\left(x + \frac{\pi}{4}\right)$$

① amplitude = 2, thus eliminate A

② when $x=0$, $f(0) = 2\cos\frac{\pi}{4} = 2 \cdot \frac{\sqrt{2}}{2} = \sqrt{2}$, thus eliminate D

③ when $x = -\frac{\pi}{4}$, $f\left(-\frac{\pi}{4}\right) = 2\cos 0 = 2 = \text{maximum}$, thus eliminate C

B is the answer

$$\begin{aligned} \#10 \quad f(-x) &= \sin[-6(-x)] + (-x)^3 \\ &= \sin 6x - x^3 \\ &= -\sin(-6x) - x^3 \\ &= -[\sin(-6x) + x^3] = -f(x) \end{aligned}$$

odd

$$\#12 \quad (1) \quad y(0) = 1 - \sin 0 \\ = 1$$

$$(2) \quad \text{Let } y(t) = 1 - \sin(6\pi t) = 1$$

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$$\sin(6\pi t) = 0$$

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$$6\pi t = 0, \pi, 2\pi, \dots \quad (t \geq 0 \text{ as } t \text{ is time})$$

So the next time point is when $6\pi t = \pi$

$$\Downarrow$$
$$t = \frac{1}{6}$$