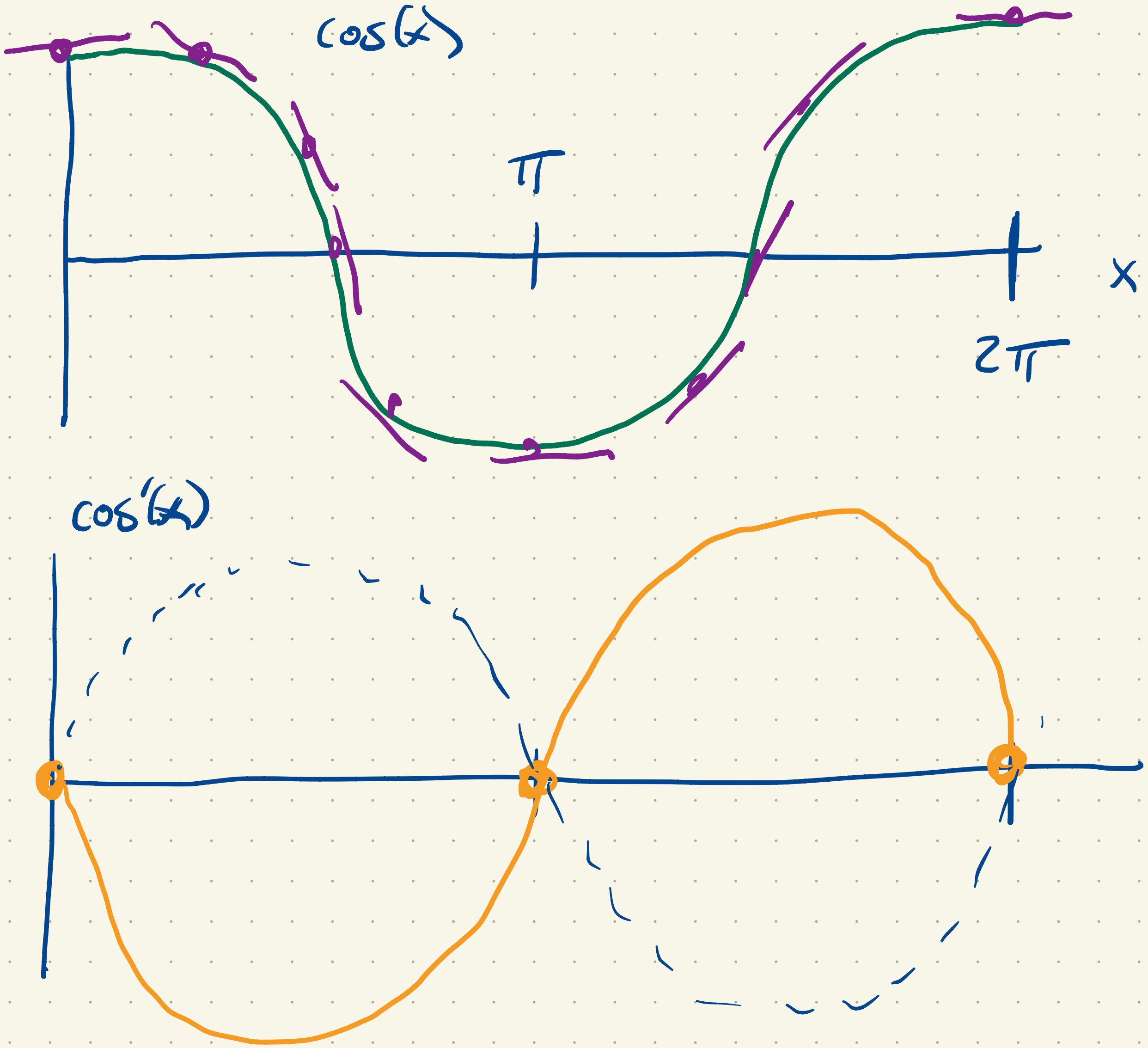
$$\frac{d}{dx}\cos(x) = -\sin(x)$$



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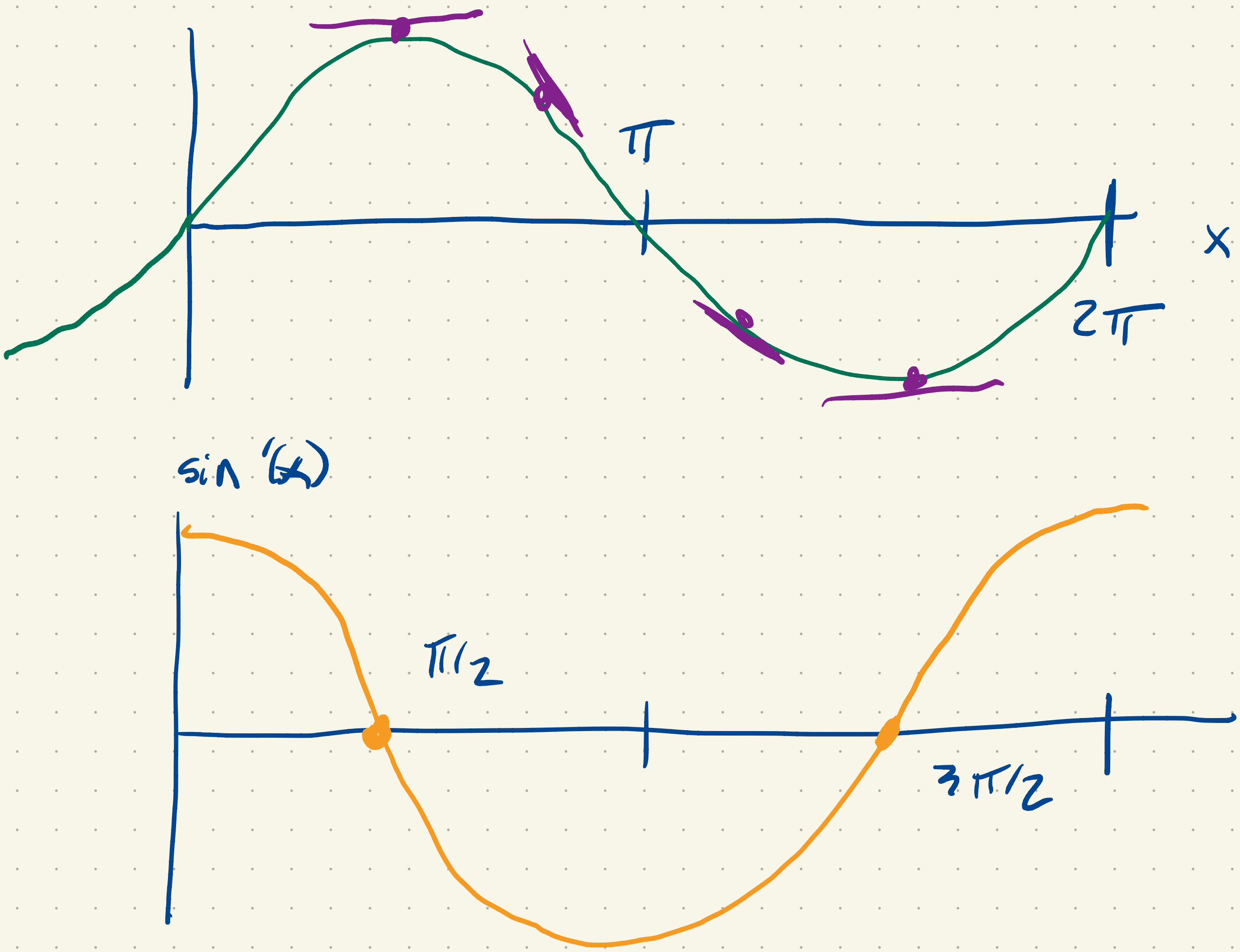
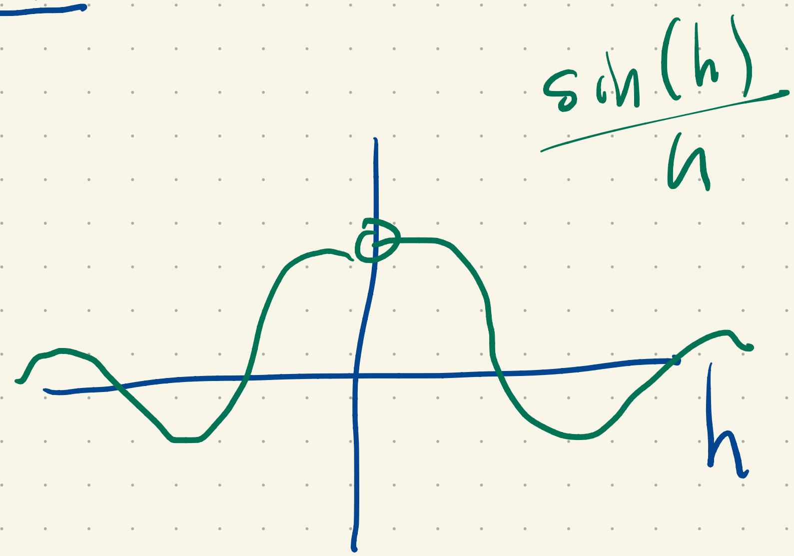


$$\sin'(0) = \lim_{h \to 0} \frac{\sin(0+h) - \sin(0)}{h}$$

$$= \lim_{h \to 0} \frac{\sin(h)}{h} = 1$$



$$\cos'(0) = \lim_{h \to 0} \frac{\cos(0+h) - \cos(0)}{h}$$

$$= \lim_{h \to 0} \frac{\cos(h) - 1}{h}$$

$$\sin'(0) = \lim_{h \to 0} \frac{\sin(0+h) - \sin(0)}{h}$$

$$= \lim_{h \to 0} \frac{\sin(h)}{h} = 1$$

-0.05
-0.005
-0.0005

$$\cos'(0) = \lim_{h \to 0} \frac{\cos(0+h) - \cos(0)}{h}$$

$$= \lim_{h \to 0} \frac{\cos(h) - 1}{h}$$

h	$\frac{\cos(h)-1}{h}$
0.1	$-0.049\ldots$
0.01	$-0.0049\ldots$
0.001	$-0.00049\ldots$

$$\sin'(0) = \lim_{h \to 0} \frac{\sin(0+h) - \sin(0)}{h}$$

$$= \lim_{h \to 0} \frac{\sin(h)}{h} = 1$$

$$\cos'(0) = \lim_{h \to 0} \frac{\cos(0+h) - \cos(0)}{h}$$

$$= \lim_{h \to 0} \frac{\cos(h) - 1}{h} = 0$$

lovely geometric proof

[See text!]

[See me!]

Last class:

$$\sec(x) = \frac{1}{\cos(x)}$$

$$\frac{d}{dx}\tan(x) = \frac{d}{dx}\frac{\sin(x)}{\cos(x)}$$

$$= \frac{\left[\frac{d}{dx}\sin(x)\right]\cos(x) - \sin(x)\left[\frac{d}{dx}\cos(x)\right]}{\cos^2(x)}$$

$$= \frac{\cos^2(x) + \sin^2(x)}{\cos^2(x)} = \frac{1}{\cos^2(x)}$$

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$$\frac{d}{dx}\tan(x) = \sec^2(x)$$