

# MATH31A: Week 3

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## Question

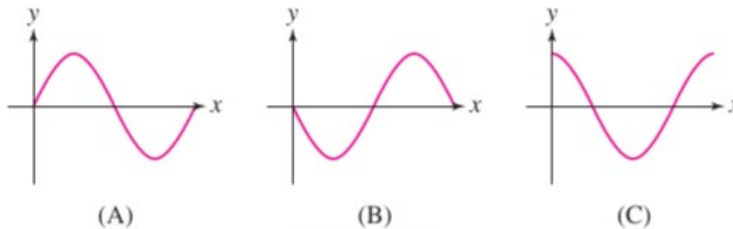
**Question 1.** For the following, use the limit definition to compute  $f'(a)$  and the equation of the tangent line at that point.

(a)  $f(x) = x^3 + x$ ,  $a = 0$

(b)  $f(x) = \frac{1}{x+1}$ ,  $a = -2$ .

**Question 2.** From textbook

**45.** Assign the labels  $y = f(x)$ ,  $y = g(x)$ , and  $y = h(x)$  to the graphs in Figure 13 in such a way that  $f'(x) = g(x)$  and  $g'(x) = h(x)$ .



**FIGURE 13**

**Question 3.** Find the derivative of the following functions  $f(x)$ :

(a)  $f(x) = (3x - 5)(2x^2 - 3)$

(c)  $f(x) = \frac{x+4}{x^2+x+1}$

(b)  $f(x) = \sqrt{x}(1-x^3)$

(d)  $f(x) = \frac{x^2+1}{x^2-1}$