WORKSHEET 4

MATH 101

Fulbright University, Ho Chi Minh City, Vietnam

Question 1. *What is the definition of a tangent line? Give a graphical representaiton.*

Question 2. *Find the tangent line of the following:*

(1) $f(x) = \sqrt{x-2}$ *at* $x = 6$

(2) $f(x) = 3x^2 - x + 2$ *at* $x = 1$

Question 3. *What is the definition derivative of a function at a point? What is it, graphically?*

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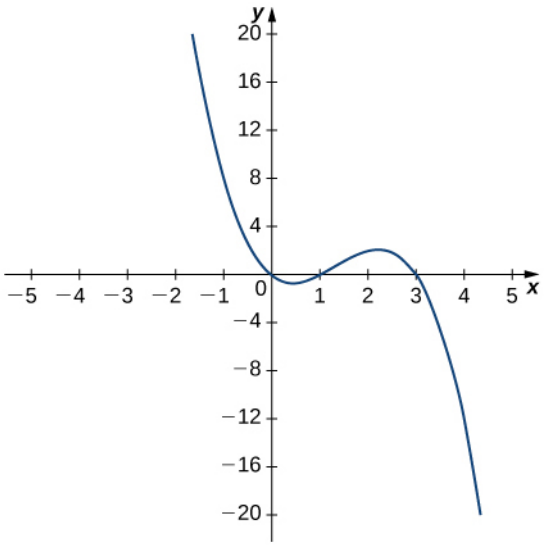
Question 4. *Given the limit, find the function $f(x)$ and the point a so that the limit is the derivative of $f(x)$ at $x = a$.*

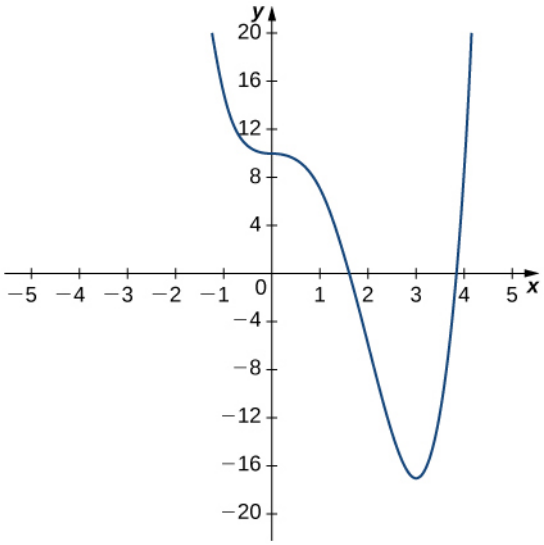
(1) $\lim_{h\to 0} \dfrac{(1+h)^{2/3} - 1}{h}$

(2) $\lim_{h\to 0} \dfrac{\cos(\pi + h) + 1}{h}$

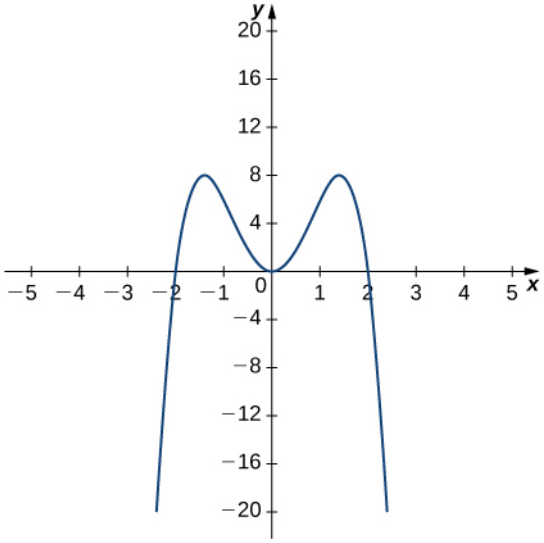
Question 5. *Sketch the graphs of the derivatives of the following functions given by the graphs below.*



(1)



(2)



(3)

Question 6. *Show that*

(1) If $f(x) = x^n$*, then* $f'(x) = nx^{n-1}$

(2) $(f'(x) + g(x))' = f'(x) + g'(x)$

(3) $(f'(x) - g(x))' = f'(x) - g'(x)$

(4) $(f(x)g(x))' = f'(x)g(x) + f(x)g'(x)$