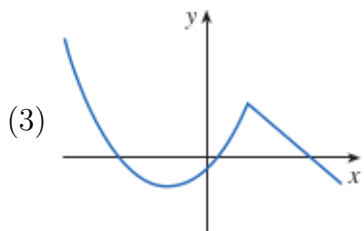
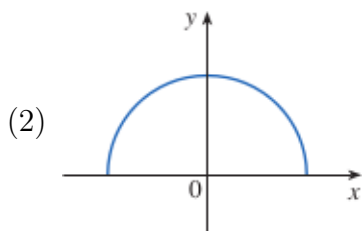
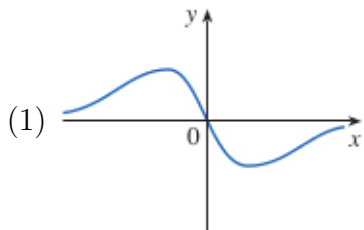


Calculus Homework2 (due to Oct.16)

1. Trace or copy the graph of the given function f . (Assume that the axes have equal scales.) Then use the method of Example 1 to sketch the graph of f' below it.



2. Find the derivative of the function using the definition of derivative. State the domain of the function and the domain of its derivative

(a) $f(x) = 4 + 8x - 5x^2$

3. Differentiate

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

(d) $y = x^2 + \cot x$

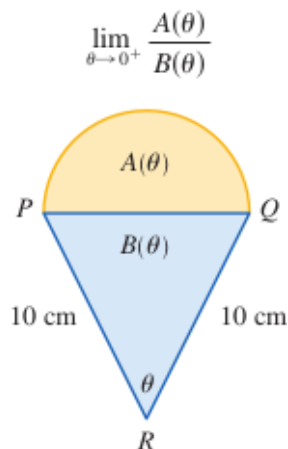
(b) $G(u) = \frac{6u^4 - 5u}{u + 1}$

(e) $g(\theta) = e^\theta(\tan \theta - \theta)$

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

(f) $f(\theta) = \frac{\sin \theta}{1 + \cos \theta}$

4. A semicircle with diameter PQ sits on an isosceles triangle PQR to form a region shaped like a two-dimensional ice-cream cone, as shown in the figure. If $A(\theta)$ is the area of the semicircle and $B(\theta)$ is the area of the triangle, find



5. Find the derivative of the function.

(a) $f(x) = \sin x \cos(1 - x^2)$

6. If $h(x) = \sqrt{4 + 3f(x)}$, where $f(1) = 7$, $f'(1) = 4$, find $h'(1)$.

7. If $F(x) = f(3f(4f(x)))$, where $f(0) = 0$ and $f'(0) = 2$, find $F'(0)$.