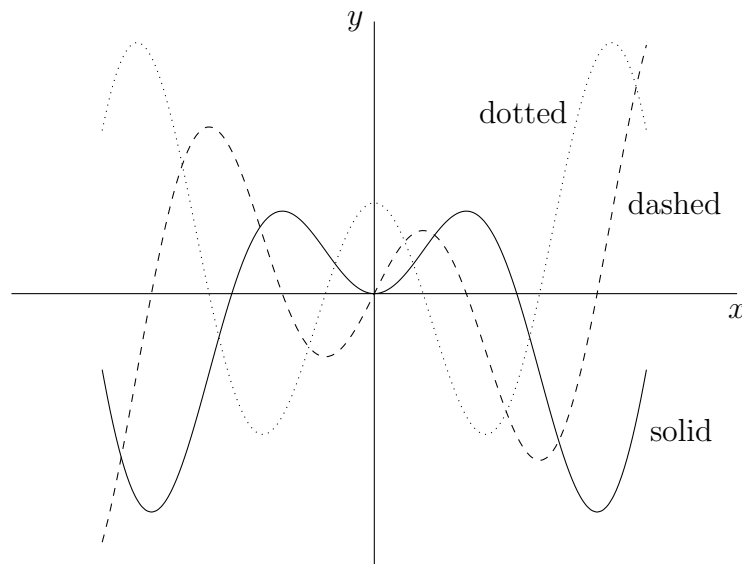


**Instructions** Please write your name in the upper right-hand corner of the page. Write complete sentences to explain your solutions.

1. Suppose that  $w$  denotes the composite function  $u \circ v$  [in other words,  $w(x) = u(v(x))$ ], and  $u(0) = 1$ ,  $v(0) = 2$ ,  $u'(0) = 3$ ,  $u'(2) = 4$ ,  $v'(0) = 5$ , and  $v'(2) = 6$ . Use the chain rule to find the value of the derivative  $w'(0)$ . [This is exercise 60 on page 193 of the textbook.]
  
2. In the figure, the three curves represent the graphs of  $y = f(x)$ ,  $y = f'(x)$ , and  $y = f''(x)$ . Which curve is which? How do you know?



**Calculus**

3. Jules is working on exercise 16 on page 198 of the textbook: find  $dy/dx$  by implicit differentiation for the curve given by the equation

$$x \cos y + y \cos x = 1.$$

“When I type the command `impDiff(x*cos(y)+y*cos(x)=1,x,y)` in my TI-89 calculator,” says Jules, “I get  $\frac{y \sin(x) - \cos(y)}{\cos(x) - x \sin(y)}$  as the answer, but Maple gives the different answer  $-\frac{x \sin(y) - \cos(x)}{-\cos(y) + y \sin(x)}$  when I type the command `implicitdiff(x*cos(y)+y*cos(x)=1,x,y)`. I don’t know which answer is right.”

Help Jules out by computing  $dy/dx$  by hand in this example.