

## Quiz 7

Key

1. Compute the indicated derivatives of each of the following functions.

- (a) [2 pts]  $f'(\frac{\pi}{4})$  for  $f(x) = \sin^2(x)$   
 $f'(x) = 2\sin(x)\cos(x) = \sin(2x)$ ,  
so  $f'(\frac{\pi}{4}) = 1$ .

- (c) [2 pts]  $s'(\frac{\pi}{2})$  for  $s(t) = \cos(4t)$   
 $s'(t) = -4\sin(4t)$ , so  
 $s'(\frac{\pi}{2}) = -4\sin(2\pi) = 0$ .

- (b) [3 pts]  $F''(x)$ , for  $F(x) = e^{x^2}$   
 $F'(x) = 2xe^{x^2}$   
 $F''(x) = 2e^{x^2} + 4x^2e^{x^2}$   
 $= (2 + 4x^2)e^{x^2}$

- (d) [3 pts]  $h''(2)$  for  $h(t) = \ln(2t)$   
 $h'(t) = \frac{1}{2t} \cdot 2 = \frac{1}{t}$   
 $h''(t) = -\frac{1}{t^2}$ , so  $h''(2) = -\frac{1}{4}$