

1. Let  $f(x) = e^x$ .

- (a) Fill in the missing entries in the table for  $f(x)$ , and use these to approximate the indicated values for  $f'(x)$ .

$x$	0.97	0.98	0.99	1.00	1.01	1.02	1.03
$f(x)$							
$f'(x)$	_____		_____		_____		_____

- (b) Using your values, guess a formula for  $f'(x)$ .

2. Let  $f(x) = 2^x$ .

- (a) Fill in the missing entries in the table.

$x$	-0.01	0	0.01	0.99	1.00	1.01
$f(x)$						
$f'(x)$	_____		_____	_____		_____

$x$	1.99	2.00	2.01	2.99	3.00	3.01
$f(x)$						
$f'(x)$	_____		_____	_____		_____

- (b) Using your values, guess a formula for  $f'(x)$ . *Hint:*  $\ln(2) \approx 0.6931$

3. Let  $f(x) = \ln(x)$ .

- (a) Fill in the missing entries in the table.

$x$	0.49	0.50	0.51	0.99	1.00	1.01
$f(x)$						
$f'(x)$	_____		_____	_____		_____

$x$	1.99	2.00	2.01	9.99	10.00	10.01
$f(x)$						
$f'(x)$	_____		_____	_____		_____

- (b) Using your values, guess a formula for  $f'(x)$ .

4. Let  $f(x) = 5^x$ . Approximate  $f'(0)$ ,  $f'(1)$ , and  $f'(2)$ , and use these values to guess a formula for  $f'(x)$ .

5. Let  $f(x) = \log_2(x)$ . Approximate  $f'(0.5)$ ,  $f'(1)$ , and  $f'(2)$ , and use these values to guess a formula for  $f'(x)$ .