AP Calculus
4.1 Tech Lab

Name: _____

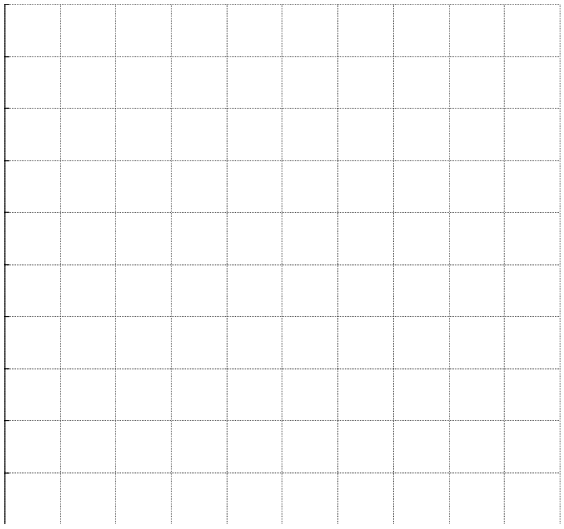
4.1 Linear Approximation

$$L(x) = f'(a)(x - a) + f(a)$$

1. $f(x) = x\sqrt{5 - x}$

a) Approximate *f(x)* by its linearization *L(x)* at *(1,2)*

b) Graph *f(x)* and *L(x)* on the same grid



c) Complete the table (use 4 decimal places)

x	0.5	0.9	1	1.1	1.5
f(x)					
L(x)					
L(x) – f(x)					

2. $f(x) = x\sqrt{5-x}$

a) Approximate *f(x)* by its linearization *L(x)* at *(4,4)*

b) Graph *f(x)* and *L(x)* on the same grid

c) Complete the table (use 4 decimal places)

x	3.5	3.9	4	4.1	4.5
f(x)					
L(x)					
L(x) – f(x)					

3. Which *L(x)* is a better approximation for *f(x)* at small equal distances? Explain your answer; refer to data or information you have on this sheet.