7.5 Euler's Method

CA #2

Calculus — Name: ______________________________

1. The table below gives the values of f', the derivative of f. If $f(4) = 1.7$, what is the approximation to $f(4.4)$ obtained by using Euler's method with 2 steps of equal size?

$\boldsymbol{x}$	4	4.2	4.4
$\boldsymbol{f'(x)}$	0.3	0.6	1.1

2. The table below gives the values of f', the derivative of f. If $f(2) = 1$, what is the approximation to $f(2.3)$ obtained by using Euler's method with 3 steps of equal size?

$\boldsymbol{x}$	2	2.1	2.2	2.3
$\boldsymbol{f'(x)}$	-0.1	-0.15	-0.3	-0.5

3. Let $y = f(x)$ be the solution to the differential equation $\frac{dy}{dx} = \frac{1}{x}$ with initial condition $f(1) = 1$. What is the approximation for $f(2)$ obtained using Euler's method with 4 steps of equal length, starting at $x = 1$?

4. Let $y = f(x)$ be the solution to the differential equation $\frac{dy}{dx} = x - y$ with initial condition $f(1) = 3$. What is the approximation for $f(1.5)$ obtained using Euler's method with 2 steps of equal length, starting at $x = 1$?

5. Let $h(x) = \int_1^x \frac{1}{t^2}\,dt$. Use Euler's method, starting at $x = 1$ with two steps of equal size, to approximate $h(3)$.

1. $f(4.4) \approx 1.88$	2. $f(2.3) \approx 0.945$	3. $f(2) \approx 1.7596$	4. $f(1.5) \approx 2.188$	5. $h(3) \approx 1.25$

Answers to 7.5 CA #2