2.3 Estimating Derivatives

Calculus Name: _____ **CA #2**

Estimate the derivative at the given point by using a calculator.

1. $f(x) = \sqrt{\sec x}$; find $f'(1)$.

2. $f(x) = \frac{x^5}{7} - x^{\frac{1}{3}}$; find $f'(-2)$.

3. The model $f(t) = t^5 - 2t^3$ measures the number of ounces filling a swimming pool t is measured in minutes. Find $f'(5.6)$.

For each function, write the equation of the tangent line at the given value of x.

4. $f(x) = \tan(\cos x)$ at $x = -1$.

5. $f(x) = -\ln\left(\frac{1}{\sqrt{1-x}}\right)$ at $x = -0.2$.

Use the tables to estimate the value of the derivative at the given point. Indicate units of measures.

6.

y yards	3	6	10	11	20
$h(y)$ feet per yard	13	21	43	50	84

a. $h'(4.5)$

b. $h'(10.5)$

7.

a Assignments	2	6	8	20	22
$G(a)$ Percent	98	94	95	92	90

a. $G'(4)$

b. $G'(21)$

8.

t minute	1	4	7	9	15
$v(t)$ ounces per minute	3	20	18	10	6

a. $v'(2.5)$

b. $v'(8)$

Answers to 2.3 CA #2

1. 1.059	2. 11.2185	3. 4,729.088 ounces per minute	4. $y - 0.5998 = 1.144(x + 1)$	5. $y - 0.091 = -0.4166(x + 0.2)$
6. a. 2.667 feet/yd^2 b. 7 feet/yd^2		7. a. −1 percent per grade b. −1 percent per grade		8. a. 5.667 ounces/min^2 b. −4 ounces/min^2