

AP CALCULUS AB
Supplement 1.8
Approximating Derivatives

Name _____
 Date _____
 Period _____

1. Use the table to approximate the expressions in a – d, and answer question e.

x	-2	-1	0	2	3	5	7
$f(x)$	-4	6	8	10	11	15	19
$g(x)$	3	0	-1	2	7	8	9
$h(x)$	18	22	28	39	50	44	36

a. $f'(2)$

b. $f'(-2)$

c. $3h'(0) - 2g'(7)$

d. $h'(4) - f'(4)$

e. Explain why $f'(2)$, approximated in (a) above, may be undefined although a numeric value was obtained by estimation.

2. Use the graph to find an exact or approximate value, whichever is appropriate, for each expression.

a. $r'(1)$

b. $r'(2)$

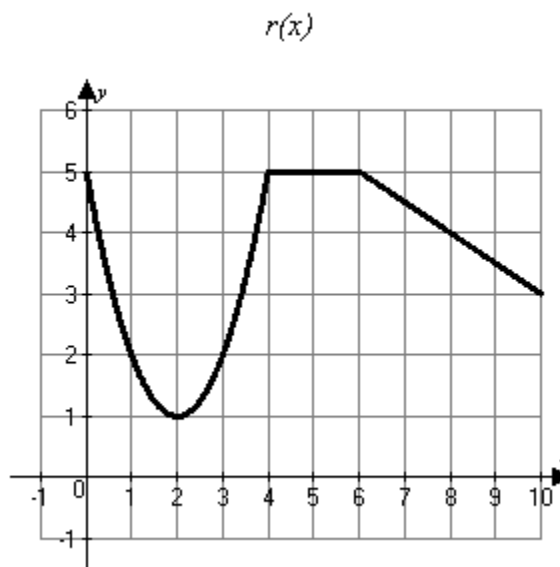
c. $r'(3)$

d. $r'(4)$

e. $r'(5)$

f. $r'(6)$

g. $r'(8)$



Supplement 1.8 Solutions

1a. $f'(2) \approx 1$

1b. $f'(-2) \approx 10$

1c. $3h'(0) - 2g'(7) \approx 16$

1d. $h'(4) - f'(4) \approx -5$

1e. There may be a discontinuity, vertical tangent, or a cusp/corner at $x = 2$.

2a. $r'(1) \approx -2$

2b. $r'(2) = 0$

2c. $r'(3) \approx 2$

2d. $r'(4)$ undefined

2e. $r'(5) = 0$

2f. $r'(6)$ undefined

2g. $r'(8) = -\frac{1}{2}$