Problem 1. Section 3.1 #12

tangent slope and tangent line

a. $\boxed{1/5}$

b. $\boxed{\text{y-29/5=(x+1)/5}}$

Problem 2. Section 3.1 #16

tangent slope and tangent line

a. $\boxed{1/6}$

b. $\boxed{\text{y-9=(x-1)/6}}$

Problem 3. Section 3.1 #22

find $f'(a)$

$\boxed{-7}$

Problem 4. Section 3.1 #24

find $f'(a)$

$\boxed{5}$

Problem 5. Section 3.1 #28

find $f'(a)$

$\boxed{-1/16}$

Problem 6. Section 3.1 #32

find the slope of secant line...

(a)
(i) -1.111111111
(ii) -1.010101010
(iii) -1.001001001
(iv) -1.000100010
(v) -1.000010000
(vi) -1.000001000
(vii) -0.909090909
(viii) -0.9900990099

(ix) -0.999000999

(x) -0.999900009999

(xi) -0.999990000

(xii) -0.999999000

(b) $\boxed{-1}$

(c) $\boxed{y=-x-1}$

Problem 7. Section 3.1 #36

simplified expression...

(a) $\boxed{h+2}$

(b) (i) $\boxed{2.1}$

(ii) $\boxed{2.01}$

(iii) $\boxed{2.001}$

(iv) $\boxed{2.0001}$

(c) $\boxed{2}$

Problem 8. Section 3.1 #44

Use the limit definition of derivative...

$f(x)$ is not defined at $x = 0$ so the derivative does not exist at the point.