HW # 8

-20

Section 3.3

$\boxed{129:15}$ a.) If $a=-1, a=2$ then $\lim_{x \to a} f(x)$ exists, but f is not continuous at a.

b.) If $a=1, a=3$ then f is continuous at a, but not differentiable at a since "corners" are not differentiable.

$\boxed{129:16}$ a.) If $a=0$ then $\lim_{x \to a} f(x)$ exists, but f is not continuous at a.

b.) If $a=1, a=3$ then f is continuous at a, but not differentiable at a since "corners" are not differentiable.

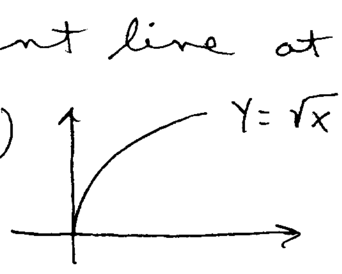
$\boxed{129:17}$ a.) If $a=5$ then $\lim_{x \to a} f(x)$ exists, but f is not continuous at a.

b.) If $a=2, a=3$ then f is continuous at a, but not differentiable at a since "corners" are not differentiable.

$\boxed{129:18}$ a.) None

b.) If $a=0, a=2, a=4$ then f is continuous at a, but not differentiable at a. There are "corners" at $a=0$ and $a=4$. There is a vertical tangent line at $a=2$.

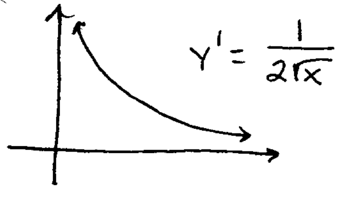
$\boxed{129:21}$ a.)



Domain: all $x \geq 0$

$$Y' = \frac{1}{2} x^{-1/2} = \frac{1}{2\sqrt{x}}$$

b.)

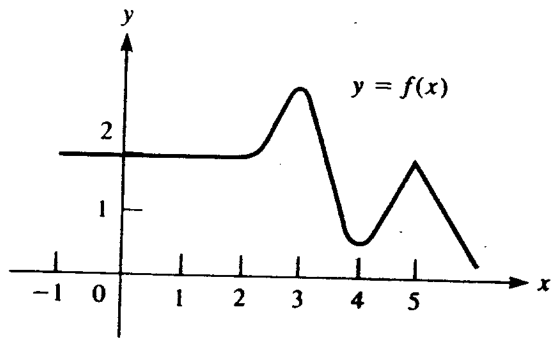


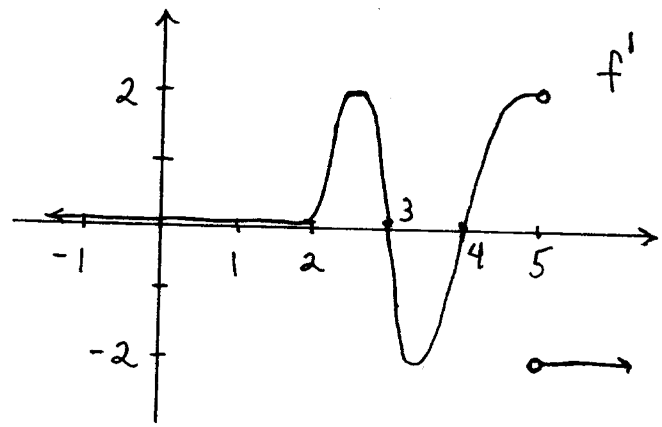
Domain: all $x > 0$

129:25b

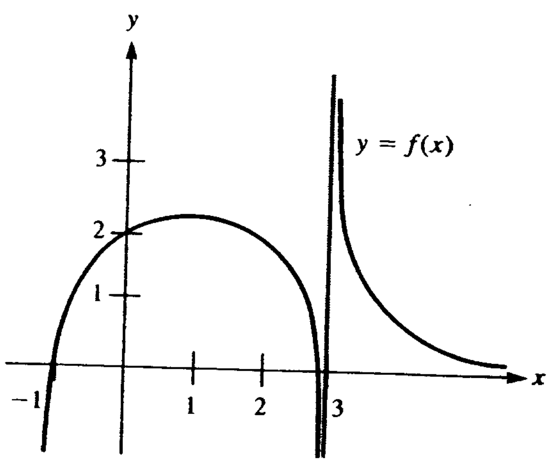
x	1	2	3	4	5	6
$f'(x)$	2	0	-2	-1	0	1

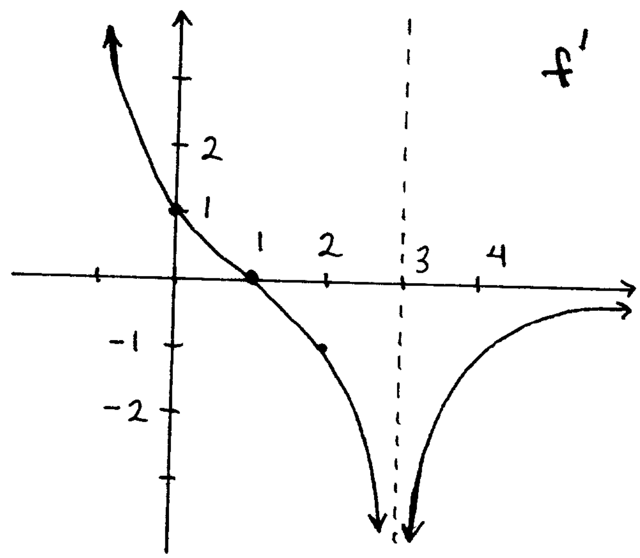
129:26





129:28





129:33 $f'(2.03) \approx \dfrac{f(2.05)-f(2.03)}{2.05-2.03} = \dfrac{4.61-4.57}{0.02} = 2$

129:34 $f'(3) \approx \dfrac{f(3.07)-f(3)}{3.07-3}$ iff

$(0.07)\, f'(3) \approx f(3.07) - f(3)$ iff

$(0.07)(-0.5) \approx f(3.07) - 4$ iff $f(3.07) \approx 3.965$