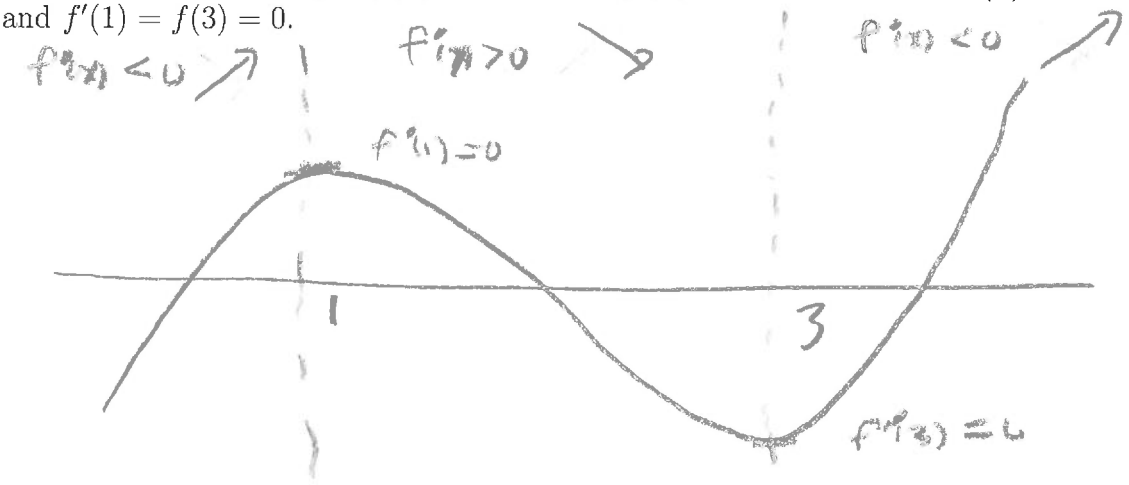
Mathematics 122

Quiz 9 Name: Key

You must show your work to get full credit.

1. Draw the graph of a function $y = f(x)$ that satisfies $f'(x) < 0$ for $1 < x < 3$, $f'(x) > 0$ for $x < 1$ or $x > 3$, and $f'(1) = f(3) = 0$.



2. Let G be the amount of gas in gallons used in flying a plane s miles. Then $G = f(s)$.

(a) In $f(50) = 300$ what are the units of 50 and 300? Units of 50 miles

Units of 300 gallons

(b) In $f'(50) = 4.5$ what are then units of 50 and 4.5?

Units of 50 miles

Units of 4.5 gallons / mile

(c) If $f'(50) = 4.5$ estimate $f(50.5)$. $f(50.5) \approx$ 302.25 gallons.

In general

$f(a+h) \approx f(a) + f'(a)h$ for small h

In our case $a = 50$, $h = .5$

$f(50.5) \approx f(50) + f'(50)(.5)$

$= 300 + (4.5)(.5)$

$= 302.25$