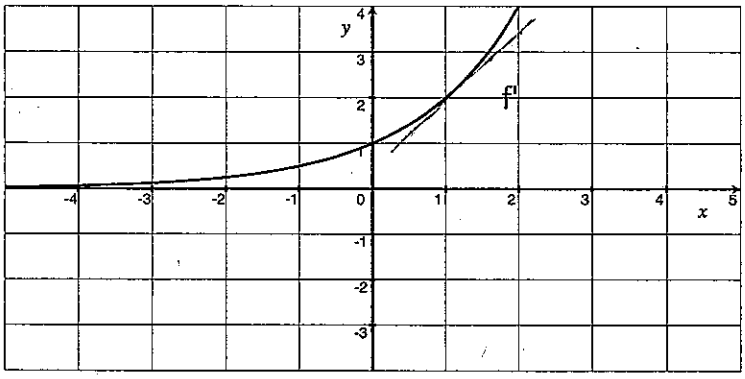
Key

Quiz 2
TQS 211

Show *all* your work (algebraically or geometrically) for each and simplify. No credit is given without supporting work.

1. (§2.1#3) The size f, of a tumor (in cubic millimeters) is given by $f(t) = 2^t$, where t is the number of months since the tumor was discovered. *Include units in your answers!!!*



(a) [2] What is the total change in the size of tumor during the first 2 months?

$f(2) - f(0) = 2^2 - 2^0 = 4 - 1 = 3$ mm^3

(b) [3] Carefully explain what $f'(1)$ is in terms of tumor sizes and months.

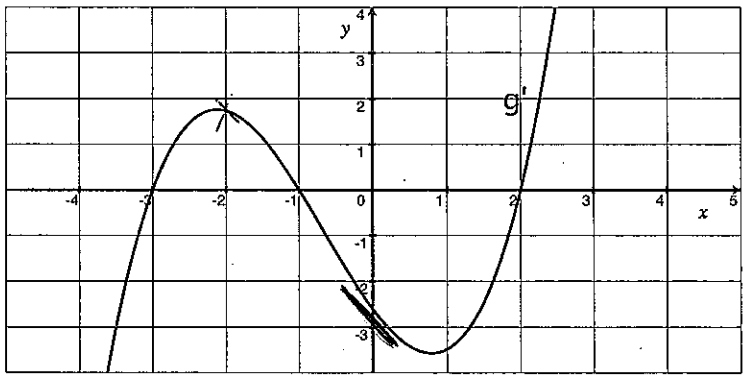
$f'(1)$ is the rate of growth of the tumor after one month (or at month 1).

rate of growth (+1) [instant]
one month (+1)
language (+1)

(c) [2] Approximate $f'(1)$ either graphically or numerically.

slope of line drawn above $\approx \frac{1.4}{1}$ or $\frac{f(1.0001) - f(1)}{1.0001 - 1} =$

2. Let g be a function whose derivative is shown below. (Thus the following is a graph of g')



(a) (§2.2#29a) [2] Is g increasing when $x = -2$? Why or why not?

$g'(-2) > 0$ so the slope of the line tangent to g at -2 is positive $\Rightarrow$ g is increasing. (+1)

reason (+1)

(b) (WebHW 3 #7) [1] Is g'' positive or negative at $x = 0$? Why or Why not?

negative (+1)

we are taking the derivative of g' so we are looking at the slope of the line tangent to the graph of g' at 0. Notice that line has a negative slope.