

# Quiz 1

## TQS 211

Name: *Key*

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

1. [2] Reduce if possible:

$$\frac{x^2 + 2x}{x^2 + x - 2}$$

$$\frac{\cancel{x(x+2)}}{(\cancel{x+2})(x-1)} = \frac{x}{x-1}$$

(+1)

$$\frac{1+TC}{C}$$

can't reduce

(+1)

2. [2] Solve for  $t$  exactly given:

use alg (+1)  
use logs (+1)

$$5 = 2e^t$$

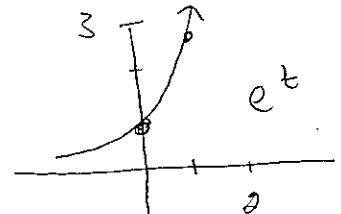
$$\frac{5}{2} = e^t$$

$$\ln \frac{5}{2} = \ln e^t$$

$$\ln \frac{5}{2} = t$$

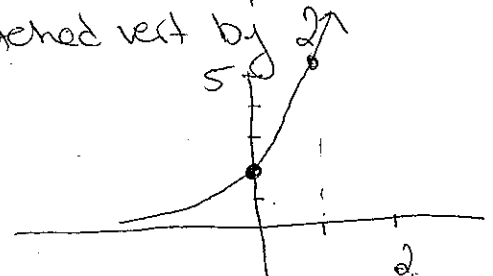
$$0 = 2e^t - 5$$

graphically

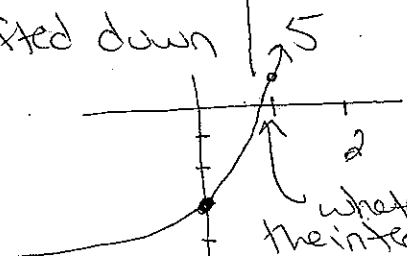


or

sketched vert by 5

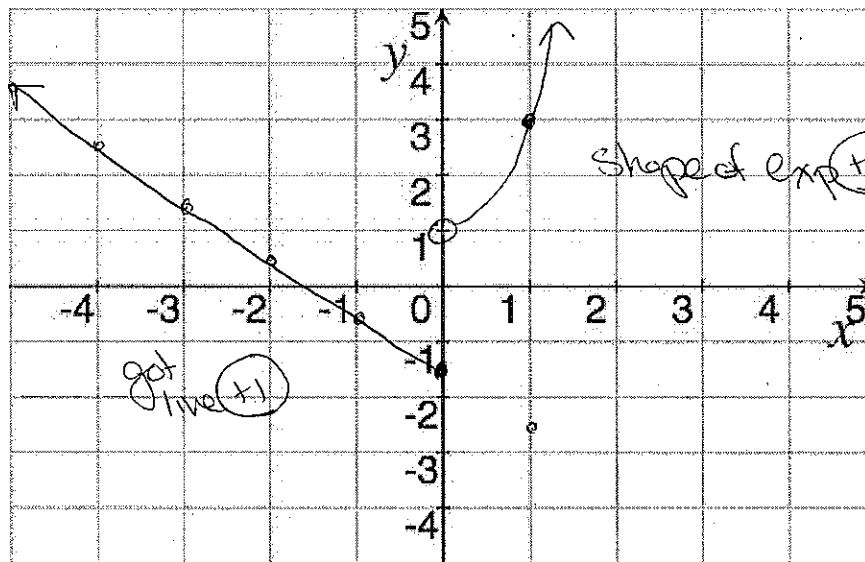


shifted down



whatever the intercept is

3. [3] Sketch the graph of  $f(x) = \begin{cases} -x - \frac{5}{2} & \text{if } x \leq 0 \\ 3^x & \text{if } x > 0 \end{cases}$



4. [3] Let  $f(x) = \ln x$  and  $g(x) = x^2 + 1$ . Find the following:

$f(e^2)$

$\ln e^2 = 2$

(+1)

$f(g(0))$

$f(0^2 + 1) = f(1)$   
 $= \ln 1$   
 $= 0$

(+1)

$g(t+h)$

$(t+h)^2 + 1$   
 $t^2 + 2th + h^2 + 1$

(+1)