Quiz 0

Key

This is a two-stage quiz. During the first stage, use your knowledge & calculator. You have 15 min. In the second stage, you are now welcome to use your books, notes, and students in the class to retake the same quiz. You have the remainder of the quiz time to write one solution (with everyones name on it!!!) to be turned in for the group.

1. [2] What do you want the instructor to know about you?
If this is stage 2 of the quiz, what do you want other students to know about you?
(There could be one thing shared by everyone or separate items.)

I have a family that I have to balance with my career. I also have a PhD in computer science.

2. [3] What characteristics do you think make a good student. Which do you have?
If this is stage 2, there could be one thing listed by everyone or separate items.

Communicating with others & bringing curiosity to different situations. Also a willingness to test out ideas that could be wrong

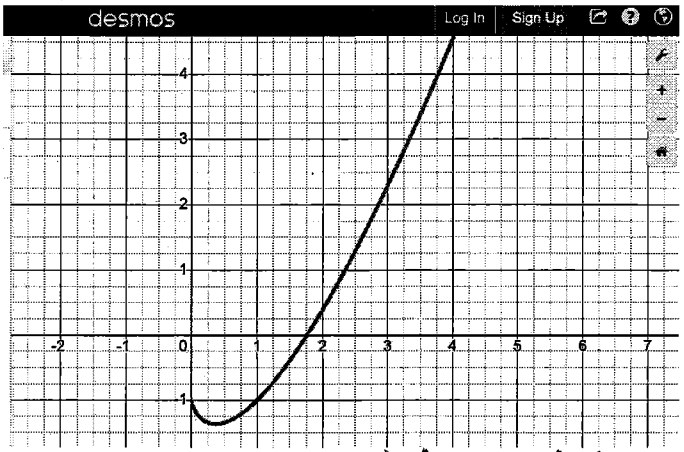
3. [2] Let a and b be real, non-zero numbers. Add $\frac{1}{a}+\frac{1}{b}$.

$$\frac{1}{a}+\frac{1}{b} = \frac{b}{b}\cdot\frac{1}{a}+\frac{1}{b}\cdot\frac{a}{a}$$

$$= \frac{b}{ba}+\frac{a}{ba} = \frac{b+a}{ba}$$

mult by fancy 1 (1.5)
common den (1.5)
add across (1.5)
notation (1.5)

4. [3] Find the equation of a line that is tangent to $f(x) = x\ln(8x) - 1$ when $x = 1$.
Note that the graph of f is graphed below.
Provide work so that it can be easily followed.



Looking for $y-y_1 = m(x-x_1)$

(1.5) { m = slope of line tang. to f @ $x=1$
$= f'(1)$
$= 1+\ln(8\cdot1) \approx 3.079$

(1.5) { then $(1, f(1)) = (1, 1\cdot\ln(8\cdot1)-1)$
$\approx (1, 1.079)$ [1]

(1.5) { so $y-(\ln(8)-1) = (1+\ln(8))(x-1)$

$f'(x) = (x)(\ln(8x))' + (x)'\ln 8x - (1)'$
$= x\cdot\frac{1}{8x}\cdot 8 + 1\cdot\ln(8x) - 0$ (1.5) (1.5) (1.5)
$= 1+\ln(8x)$

(1.5) product rule