MATH 102, Spring 2023 **Name:** _____
In class work 11 **Row and Seat**: _____

"Study hard what interests you the most in the most undisciplined, irreverent and original manner possible." RICHARD FEYNMANN

In class work 11 has questions 1 through 4 with a total of 10 points. This assignment is due at the end of the class period (9:55 AM). This assignment is printed on **both** sides of the paper.

2 1. Given that E is an exponential function and that $E(0) = 9$ and $E(2) = 11$, find a formula for E.

2 2. Given that H is an exponential function with initial value of 8 and that

$$\frac{H(4)}{H(3)} = \frac{2}{3},$$

find a formula for H.

2 3. At 6 AM, Louisa has 340 mg of caffeine circulating in her blood. After T hours, the amount of caffeine C in her blood is $C = 340 \times 0.9^T$. When Louisa goes to bed at 10 PM, how much caffeine is still in circulation?

4. Intense physical exercise can temporarily raise the amount of creatine in the blood above its normal level.[1] After intense exercise, Martin's blood creatine level C is

$$C = 0.9 + 0.2 \times \left(\frac{1}{2}\right)^{T/4},$$

where T is the number of hours after exercise.

2 (a) Make a table of Martin's creatine levels after 2,4,8, and 16 hours.

2 (b) Many many hours after intense exercise, what is Martin's blood creatine level? Specifically, what is the horizontal asymptote toward infinity to the equation $C = 0.9 + 0.2 \times \left(\frac{1}{2}\right)^{T/4}$?

[1] I suggest that you *not* take medical advice from a mathematician, but if you are scheduled for a kidney function test, skipping rope for 60 minutes followed by 20 minutes of burpees the day before might lead to worry and additional medical tests.