MATH 201 Your name: _____

Chapter 4 checkpoint!

Chapter 1 scorecard:

Learning target:	DF1	DF2	DFa	DFb	AD2
Your confidence level before starting (0-5):					
Your confidence level after the quiz (0-5):					
The mark you earned on this attempt:	Success! Try again!	Success! Try again!	Success! Try again!	Success! Try again!	Success! Try again!

Chapter 2 scorecard:

Learning target:	DF3	DF4	DF5	DF6	DF7
Your confidence level before starting (0-5):					
Your confidence level after the quiz (0-5):					
The mark you earned on this attempt:	Success! Try again!	Success! Try again!	Success! Try again!	Success! Try again!	Success! Try again!

Chapter 3 scorecard:

Learning target:	AD3	AD4	AD5	AD8	AD9
Your confidence level before starting (0-5):					
Your confidence level after the quiz (0-5):					
The mark you earned on this attempt:	Success! Try again!	Success! Try again!	Success! Try again!	Success! Try again!	Success! Try again!

Chapter 4 scorecard:

Learning target:	IN1	IN2	IN3	IN5	INx
Your confidence level before starting (0-5):					
Your confidence level after the quiz (0-5):					
The mark you earned on this attempt:	Success! Try again!	Success! Try again!	Success! Try again!	Success! Try again!	Success! Try again!

Have fun and do your best! I believe in u ♡

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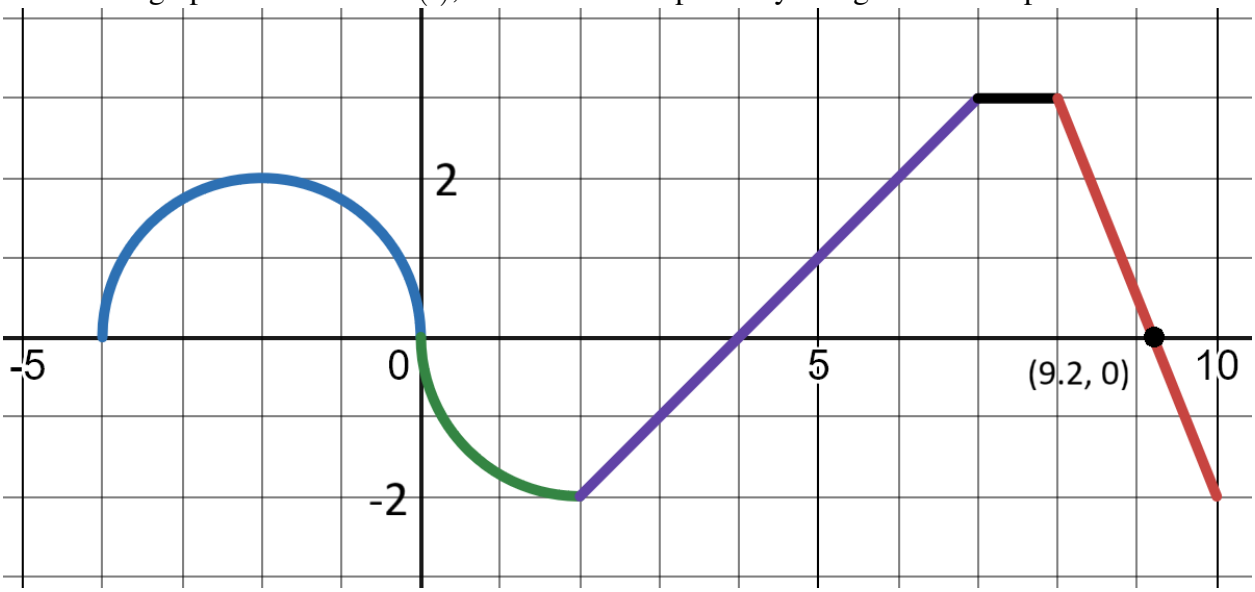
Learning target IN1, version 1

Here is the graph of a function $h(t)$, which is made up of only straight lines and parts of circles.



Compute each of the following.

(a) $\int_{-4}^{0} h(t)\,dt$

(b) $\int_{0}^{2} h(t)\,dt$

(c) $\int_{2}^{4} h(t)\,dt$

(d) $\int_{4}^{7} h(t)\,dt$

(e) $\int_{7}^{8} h(t)\,dt$

(f) $\int_{8}^{9.2} h(t)\,dt$

(g) $\int_{9.2}^{10} h(t)\,dt$

(h) $\int_{-4}^{10} h(t)\,dt$

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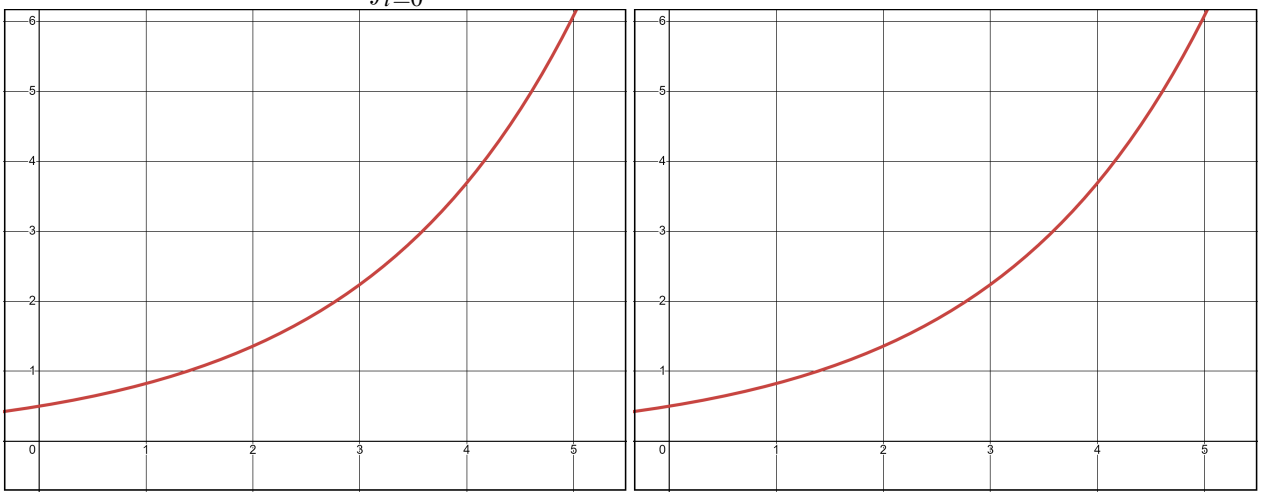
Learning target IN2 and INx, version 1

The rate at which pollution escapes a scrubbing process at a manufacturing plant increases over time as filters and other technologies become less effective. Suppose that the rate of pollution (measured in tons per week) is given by the function r that is pictured below. Throughout this problem, we're interested in $\int_{t=0}^{5} r(t)\,dt$.



(a) On the first graph above, carefully draw the *left* Riemann sum with four rectagles of uniform width. (How wide should each rectangle be?)

(b) On the second graph above, carefully draw the *right* Riemann sum with four rectangles.

(c) If $r(t) = 0.5e^{0.5t}$, compute both of these Riemann sums. Show your work for computing the heights of the rectangles. (Hint: lots of your work will overlap!)

Include units on every number you write.

(d) Give your best guess for $\int_{t=0}^{5} r(t)\,dt$, **include units**, and explain what this number means about pollution.

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Learning target IN3, version 1

Explain how to find the *general* antiderivative for each function.
(Hint: Derivatives eat constants, so what should antiderivatives do?)

(a) $2^x + 3^x - 5^x$

(b) $7x^4 + 4x^3 - x$

(c) $5\sin(x)$

(d) $\dfrac{1}{5x^{1/5}}$

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Learning target IN5, version 1

Explain how to compute the exact value of each of the following definite integrals using the Fundamental Theorem of Calculus.
Leave all answers in exact form, with no decimal approximations.

(a) $\int_{x=4}^{6} \left(\frac{6}{x}\right) dx$

(b) $\int_{x=\frac{5}{4}\pi}^{\frac{4}{3}\pi} \left(-2\sec^2(x)\right) dx$

(c) $\int_{x=-2}^{-1} \left(3x^3 + 10x - 1\right) dx$