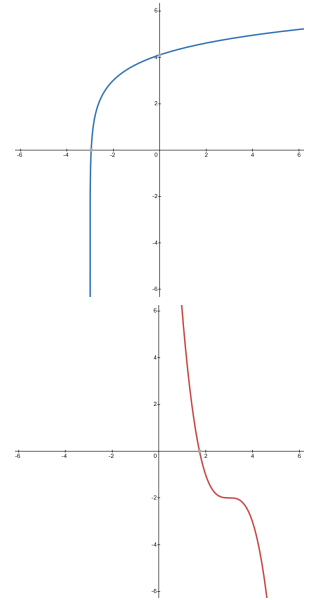


Math 128 Assessment 2

Instructions: Write out solutions using complete sentences to explain your work. Use a separate piece of paper for each standard. You may use the internet as long as it does not solve the problem for you. Remember you are convincing me that you understand the concepts, not simply giving me “the answer”. I know the answer. When you are done, upload your work to Gradescope.

Standard 4.

- 4-1. Draw the graphs of $y = |x|$, $y = \sqrt{x}$, and $y = e^x$. What are some defining characteristics of these parent functions? (Some possible characteristics include properties of their shapes, their intercepts, asymptotes, domain, range, and anything else you think is relevant.)
- 4-2. To the right there are transformed versions of two parent functions. Determine the parent function for each of them and explain how you know you are correct.
- 4-3. What is the parent function for a parabola? Explain your reasoning.



Standard 5.

- 5-1. When the parent function $f(x) = x^2$ is reflected across the x -axis, compressed horizontally by a factor of 3, and translated up by four units, what is the equation of the corresponding graph? Explain your work.
- 5-2. In the second graph on the right (the red curve from Question 4-2), only reflections and translations have been applied. What is the equation of this graph? Justify your answer.
- 5-3. Consider the equation $y = \frac{1}{4}|(x - 2)| - 3$. Identify out the parent function, the transformations being applied to the parent function, and use the transformations to carefully draw the curve of its graph on coordinate axes. Explain your work.

Standard 6.

- 6-1. Below are the graphs of the sine curve and the cosine curve. Which is which? Use information from the unit circle to justify your answer.
- 6-2. Apply the transformation techniques from Standard 5 to draw the graph of the equation $y = 3\sin(2x) + 4$. Label the coordinates of the y -intercept as well as the first maximum point and first minimum point in the first quadrant. Explain the transformations you applied to the parent function.
- 6-3. Suppose you wanted to apply a transformation to the cosine function $\cos(x)$ to create a function $f(x)$ whose period is 1. What transformation would it be? What is the formula for $f(x)$? Explain your reasoning.

