

Homework #22

First & Last Name: _____ **Class:** _____

For homework to be graded, it must be *fully completed*. This means you must **show your work**.

1. [Challenge] Construct a composite function $k(x)$ using $f(x) = \sqrt{x}$ and $g(x) = \log(x)$ if $k(x) = \frac{1}{2} \log(x)$.

2. Write a thorough description of the function

$$y = \frac{x^2 + 2x - 15}{x - 2}$$

Include a slope statement, a complete set of approach statements, and describe its end behavior.

[Desmos](https://www.desmos.com/calculator/evbdq1yycn) (desmos.com/calculator/evbdq1yycn).

3. [Challenge] Calculate the value of the given summation and explain how you found your answer.

$$\sum_{p=1}^{80} \cos\left(\frac{\pi p}{2}\right)$$

4. Is the inverse of an odd function also a function? If the inverse is a function, is it also an odd function? How do you know? Include a statement to support your answer and sketch a graph of an example. Investigate this using the [Draw Inverse eTool](https://www.desmos.com/calculator/4sogeh3ql1) (desmos.com/calculator/4sogeh3ql1)

5. Calculate the volume of the solid formed by rotating the flag bound by the x - and y -axes and $y = \sqrt{9 - x^2}$, in the first quadrant, about the y -axis.

6. For the given function, write an expression using summation notation that will approximate the area under the curve for $3 \leq x \leq 7$ using eight rectangles. Specify if you use left, right, or midpoint rectangles. Then enter this summation expression into Desmos and evaluate the approximate area.

$$f(x) = \frac{2(x+4)}{x+6}$$

7. Rewrite each of the following sums using summation notation.

a. $5 + 7 + 9 + 11 + 13$

b. $2 \cos(2\pi) + 3 \cos(3\pi) + 4 \cos(4\pi) + 5 \cos(5\pi)$

c. $\frac{1}{5}f(-2) + \frac{1}{5}f(-1) + \frac{1}{5}f(0) + \frac{1}{5}f(1) + \frac{1}{5}f(2)$