

Outcome 3: Use the language of mathematics to determine relationships and patterns in graphs and characteristics of circular trig functions using prerequisite knowledge of graphing techniques of common functions.

**Math 1540 Assessment Outcome 3 Spring 2022**

1. (12 pts.) Describe precisely the effect of each value (number) in the equation when the circular function is graphed. All terms in the word bank are to be used at least once.

**WORD BANK** phase shift period amplitude vertical shift reflect in x-axis reflect in y-axis

$$f(x) = 4 \cos\left(5\left(x - \frac{\pi}{15}\right)\right) + 18$$

Note that this is equivalent to  $f(x) = 4 \cos\left(5x - \frac{\pi}{3}\right) + 18$

4
What if the "4" was "negative 4" instead of positive?
5
What if the "5" was "negative 5" instead of positive?
18
$-\frac{\pi}{15}$

2. (12pts. total) Write the letter of the equation on its matching graph. Scale for the y axis is one per gridline.

- A.  $y = \sin(2x)$
- B.  $y = \sin(x) + 2$
- C.  $y = 2 \sin(x)$
- D.  $y = \sin(x) - \frac{\pi}{2}$
- E.  $y = -2 \sin(x)$
- F.  $y = \sin\left(x - \frac{\pi}{2}\right)$

