

MATH 131: WORKSHEET 3

## Manipulating the cosine function

### Questions

- (1) Sketch the plot of the cosine function  $\cos(x)$ . Where are the roots? At what height are the peaks and troughs?
- (2) Sketch the plot of the function  $f(x) = 3 \cos(x) - 2$ . Where are the peaks and troughs? Give both the  $x$  and  $y$  coordinates.
- (3) Let  $g(x) = \cos(2x)$ . Where are the roots of  $g$ ? Use these roots to sketch a plot of  $g$ .
- (4) Sketch a plot of the function  $q(x) = 5 \cos(4x) + 2$ .
- (5) Sketch a plot of the function  $\cos(4x - 3)$ .
- (6) Construct a cosine function that has adjacent roots at  $x = 4$  and  $x = 12$ , is vertically centered at  $y = 0$ , and has amplitude 7.
- (7) Sketch a plot of the sine function.
- (8) Construct a sine function that has adjacent roots at  $x = 4$  and  $x = 12$ , is vertically centered at  $y = 0$ , and has amplitude 7.

### Responses