

Chapter 1.5: More Trig and Also Some Graphing Puzzles

Calculus I

College of the Atlantic. Fall 2018

1. Make a rough sketch (by hand) of $f(x) = -2 \sin(4x) + 3$.

2. Steve Ressel has determined that the yearly population $P(t)$ of lizards on an island is well approximated by:

$$P(t) = 1000 + 120 \sin\left(\frac{\pi}{6}(t - 3)\right), \quad (1)$$

where t is measured in years since 1980.

- (a) What is the period of the lizard oscillations?
- (b) What is the maximum number of lizards found on the island?
- (c) What is the minimum number of lizards found on this island?
- (d) What year after 1980 does the first minimum lizard population occur

3. Make rough sketches of the following functions. Don't use a calculator. These are tricky, but fun.

- (a) $2^{\sin(x)}$
- (b) $\sin(2^x)$
- (c) $(\sin(x))^2$
- (d) $\sin(x^2)$
- (e) $x^2 \sin(x)$