

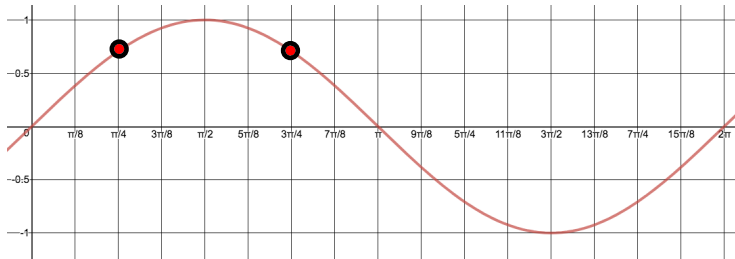
L6 – 5.4 Solve Double Angle Trigonometric Equations

MHF4U

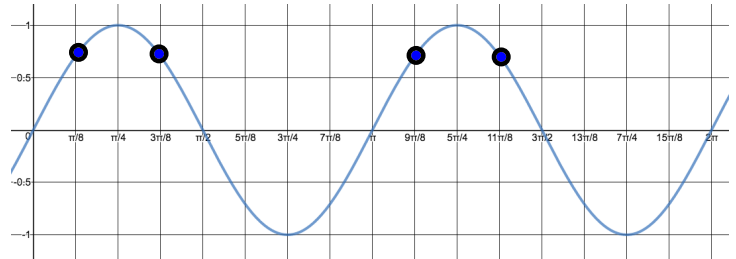
Jensen

Part 1: Investigation

$$y = \sin x$$



$$y = \sin(2x)$$



a) What is the period of both of the functions above? How many cycles between 0 and 2π radians?

b) Looking at the graph of $y = \sin x$, how many solutions are there for $\sin x = \frac{1}{\sqrt{2}} \approx 0.71$?

c) Looking at the graph of $y = \sin(2x)$, how many solutions are there for $\sin(2x) = \frac{1}{\sqrt{2}} \approx 0.71$?

d) When the period of a function is cut in half, what does that do to the number of solutions between 0 and 2π radians?

Part 2: Solve Linear Trigonometric Equations that Involve Double Angles

Example 1: $\sin(2\theta) = \frac{\sqrt{3}}{2}$ where $0 \leq \theta \leq 2\pi$

Example 2: $\cos(2\theta) = -\frac{1}{2}$ where $0 \leq \theta \leq 2\pi$

Example 3: $\tan(2\theta) = 1$ where $0 \leq \theta \leq 2\pi$