Name: MARKING GUIDE

Maths Specialist Unit 2, Investigation 1 – 2015
Trig Graphs and Functions – Validation

1. [5 marks]

For **y = a cos b(x + c)**, state how each of the following affects the graph:

(a) 'a' affects the graph by Dilates parallel to y-axis ½, scale factor |a|. ½

(b) 'b' affects the graph by Dilates parallel to x-axis ½ scale factor $\frac{1}{|b|}$. ½

(c) 'c' affects the graph by horizontal translation ½ (phase shift), |c| units ½

(d) Sate the range of the graph: $-a \leq y \leq a$ ✓✓

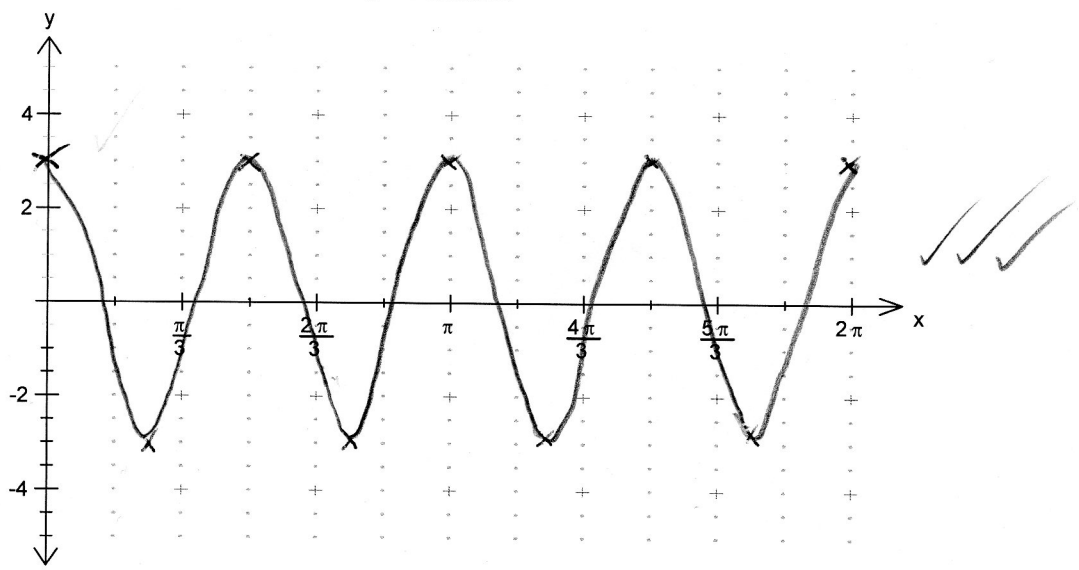
2. [15 marks]

Sketch graphs of each of the following for {x: 0 ≤ x ≤ 2π} stating the amplitude and period of each.

(a) f(x) = 3 cos 4x

Amplitude = 3 ✓

Period = $\frac{2\pi}{4} = \frac{\pi}{2}$ ✓

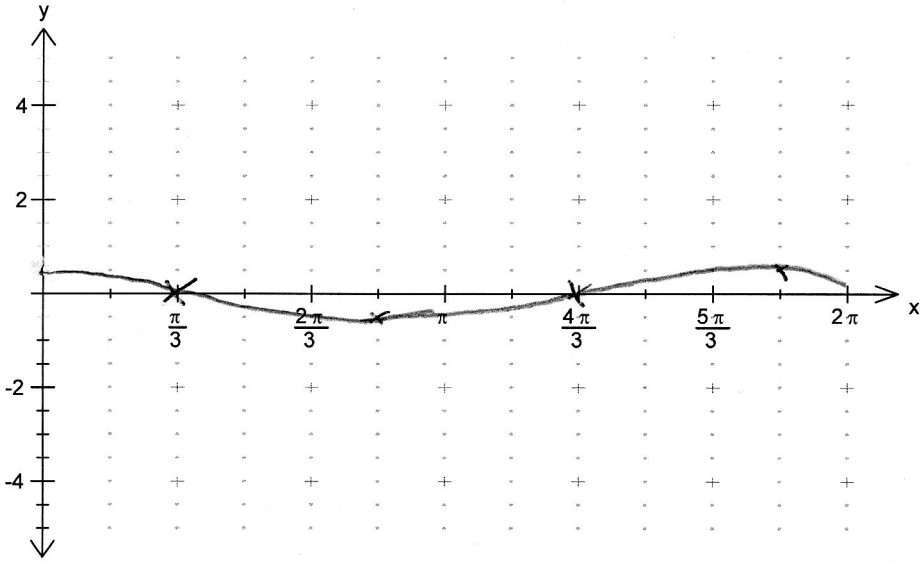


✓✓✓

(b) $f(x) = -\frac{1}{2}\sin\left(x - \frac{\pi}{3}\right)$

Amplitude = $\frac{1}{2}$ ✓

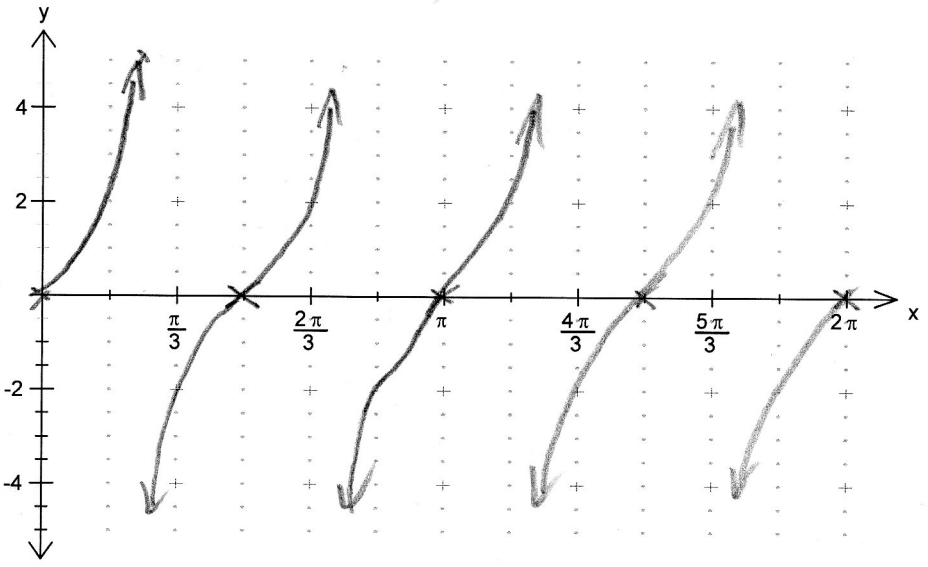
Period = 2π ✓



(c) $f(x) = \tan 2\left(x + \frac{\pi}{2}\right)$

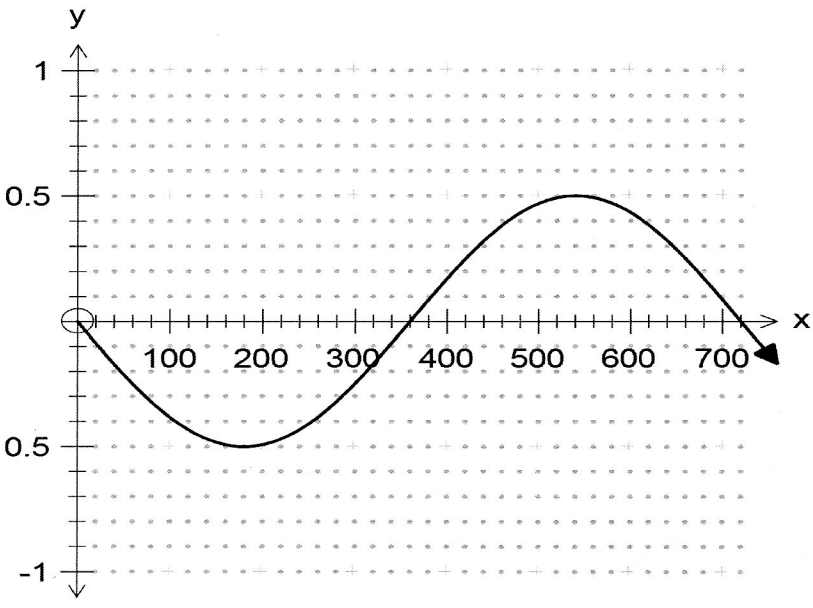
Amplitude = undefined ✓

Period = $\pi/2$ ✓



3. [12 marks]

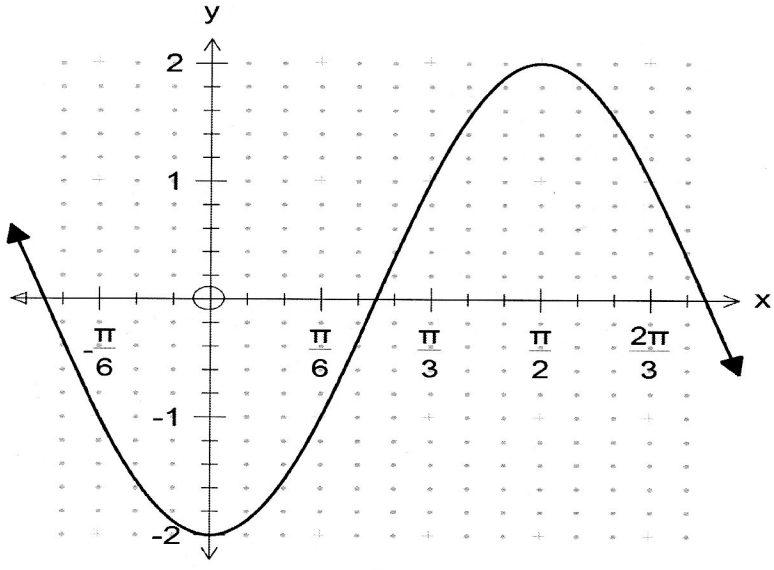
State the amplitude, period and give the equation of each of the following graphs.



other answers possible

Amplitude: $\frac{1}{2}$ ½ Period: 720° ½

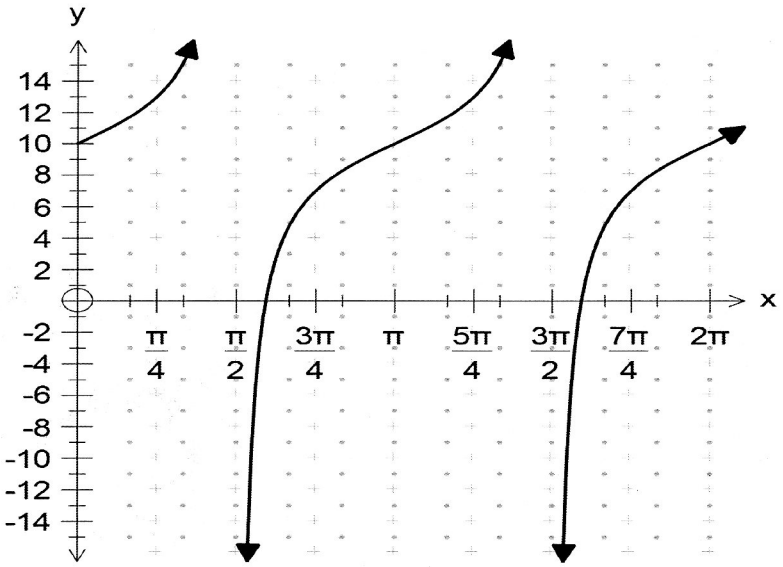
Equation: $y = -\frac{1}{2}\sin\left(\frac{x}{2}\right)$ ✓ ✓ ✓



other answers possible

Amplitude: 2 ½ Period: π ½

Equation: $y = -2\cos 2x$ ✓ ✓ ✓



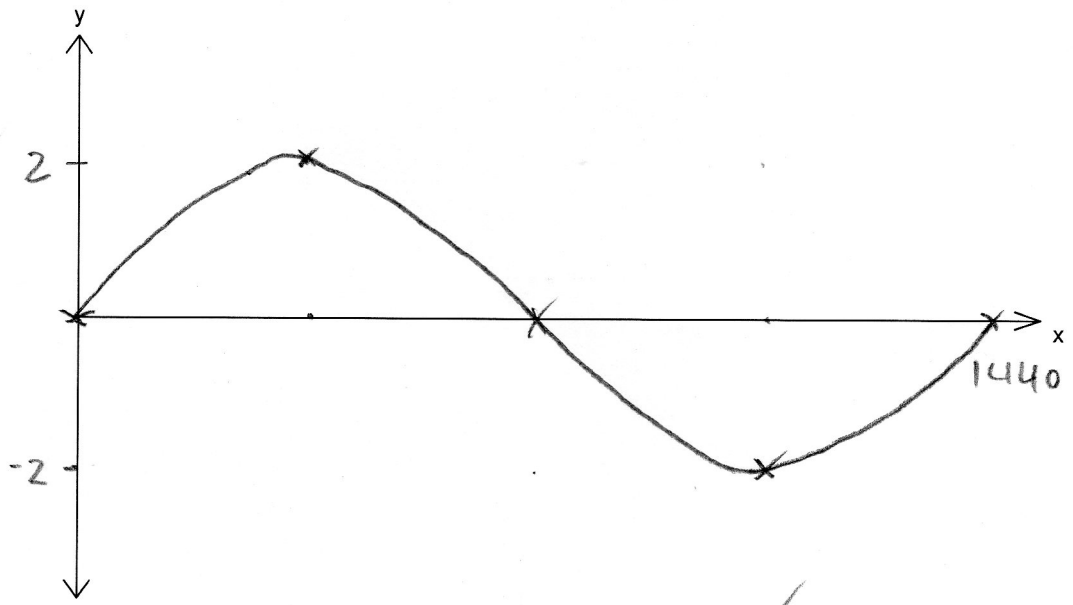
Amplitude: undefined ½ Period: π ½

Equation: $y = 3\tan x + 10$ ✓

4. [8 marks]

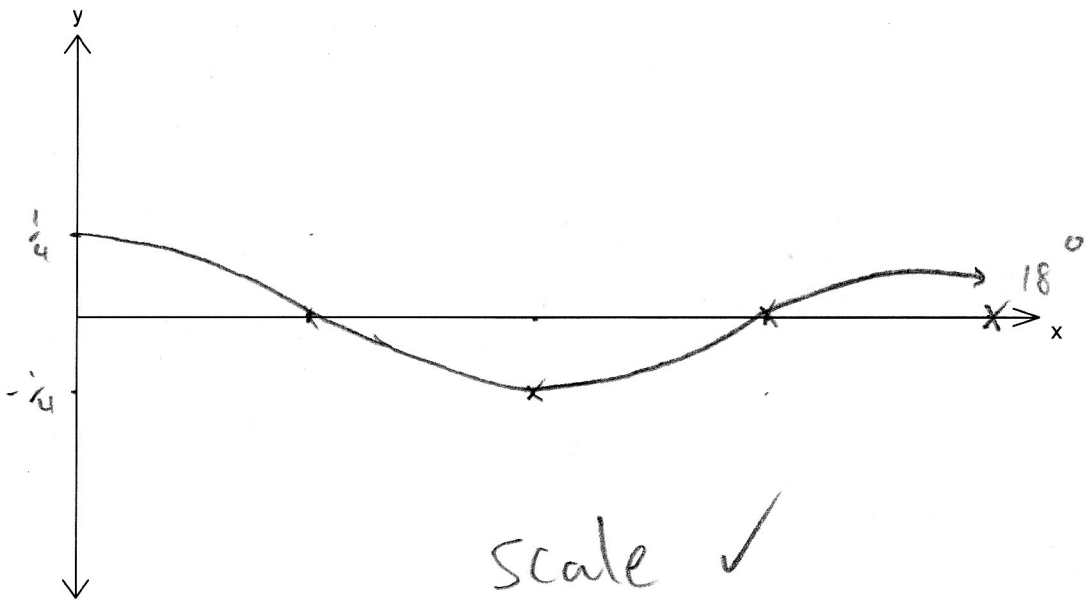
Using degrees on the x axis, neatly sketch one completed cycle (period) of the following, showing clearly the horizontal and vertical scales.

(a) $y = 2\sin\frac{x}{4}$



scale ✓
period ✓
accuracy ✓✓

(b) $y = \frac{1}{4}\cos 20x$



scale ✓
period ✓
accuracy ✓✓

END OF VALIDATION