Graphing and Trigonometric functions Assignment

Date assignment given to student: Thursday 06/02/20
Assignment Date due: Sole room, Friday 8am 13/3/20.

This assignment must be submitted using A4 or A3 paper only with your full name clearly written on all pages.

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<td><strong>1)</strong></td>
<td>i) Use a suitable technology to sketch on the same number plane:</td>
<td>(2 marks)</td>
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<td>$y = \sin x$ and $y = \sin(x - \pi)$</td>
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<td>ii) Hence describe, using the graphs in part i) above, the transformation from</td>
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<td><strong>2)</strong></td>
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3) i) Use a suitable substitution for $x$ and exact trigonometric ratio, show that:

$$\sin(\pi - x) = \sin x$$

(1 mark)

ii) Use a suitable technology to sketch on the same number plane:

$$y = \sin x \quad \text{and} \quad y = \sin(\pi - x)$$

(2 marks)

4) i) Use a suitable technology to sketch:

$$y = \frac{x}{x - 1}$$

(1 mark)

ii) a) Show algebraically that $f(x) = \frac{x}{x - 1} = 1 + \frac{1}{x - 1}$

(1 mark)

b) Sketch, without the use of technology, $y = f(x)$ showing clearly the coordinates of any $x$ and $y$ intercepts, the asymptotes and calculations for the behaviour of $y = f(x)$ as $x$ approaches positive and negative infinity.

(2 marks)

5) Use a suitable technology to justify the solutions of:

i) $\sin 2x = 1$ if $0 \leq x \leq 2\pi$

(3 marks)

ii) $\cos (x - \frac{\pi}{2}) = -1$ if $-2\pi \leq x \leq 2\pi$

(4 marks)

Marking scheme

**Understanding, Fluency and Communication**

Q1 – 3 marks
Q2 – 3 marks
Q3 – 3 marks
Q4 i) – 1 mark

**Problem Solving, Reasoning and Justification**

Q4 ii) – 3 marks
Q5 – 7 marks

End of Assignment