REVISION SHEET – FP2 (WJEC)

SOLVING TRIGONOMETRIC EQUATIONS

### Before the exam you should know:

* How to find the general solution of simple trigonometric equations, such as . (Remember, this involves knowing the trigonometric curves and their periodicity).
* Knowledge of the above is applied to solve equations, such as:
* Solve equations such as:

using the substitution

The main ideas are:

* General solutions of trigonometric equations using the formulae, , and the half angle identities for , and (all provided in the formula booklet).

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| **Factor formulae (in formula booklet)** | **Half angle identities**  Let , then  ,    ⇒ [not in formula booklet] |
| **Example 1** Solve  **Solution**  By quick analysis it can be seen that and are both multiples of two.  ∴ Rearranging equation first gives:  Now rewriting the brackets by using the following identity:  (where and ) gives:  ⇒[1] or [2]  [2]  So, solving for *θ* and using the periodicity of the cosine curve:  from [1] or  and also from [2]    ∴ There are three general solutions. | **Example 2** Using the substitution ,  solve, .  **Solution**  Using the identity:  Original equation becomes:  ⇒  ⇒ [1] or [2] or [3]  So, solving for *θ* and using the periodicity of the tangent curve:    from [1]    from [2]    from [3]  ∴ There are three general solutions. |