

Mathematics for Science

Assignment 9

Trigonometrical Identities and Formulae

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Instructions: Attempt all the Questions

- 1) Show that  $\sin x + \sin y = 2 \sin \left(\frac{x+y}{2}\right) \cos \left(\frac{x-y}{2}\right)$  i. e. the factor formula.
- 2) Show that  $\sin x = 2 \sin \frac{x}{2} \cos \frac{x}{2}$  i. e. halfangle formula.
- 3) Solve  $3 \tan \theta - \cot \theta = 2$  for  $0^\circ \leq \theta \leq 360^\circ$
- 4) Evaluate with using a scientific calculate ;  $2 \sin 105^\circ \cos 105^\circ$
- 5) Show that  $(\cos \theta + \sin \theta)^2 - \sin 2\theta = 1$
- 6) Solve  $\tan(x + 20^\circ) = \sin 40.5^\circ$  for  $0^\circ \leq x \leq 360^\circ$
- 7) Solve  $3 \cos A + 4 \sin A = 5$  for  $0^\circ \leq A \leq 360^\circ$
- 8) Given that  $\cos A = \frac{12}{13}$  and  $\cos B = 0.6$  find the values of;  
 $\cos(A + B)$ ;  $\sin(A + B)$ ,  $\cos(A - B)$ ,  $\sin(A - B)$ , and  $\tan(A + B)$  (Take A and B as acute angles).