Essential Skills 16

The skills in this series of worksheets appear frequently.

These are the GIFTS you must take to succeed

The Wave Function

Write in the required form in each, $k > 0, 0 \le a \le 360$:

1. $4cosx + 3sinx$ in the form $kcos(x - a)°$

2. $5sinx + 12cosx$ in the form $ksin(x + a)°$

3. $2cosx - 5sinx$ in the form $kcos(x + a)°$

4. $sinx - cosx$ in the form $ksin(x - a)°$

5. $\sqrt{2}cosx + 2sinx$ in the form $kcos(x - a)°$

6. $3sinx + \sqrt{5}cosx$ in the form $ksin(x + a)°$

7. $2cosx + sinx$ in the form $kcos(x + a)°$

8. $3sinx - 2cosx$ in the form $ksin(x + a)°$

9. $cosx + 3sinx$ in the form $ksin(x + a)°$

10. $6sinx + 8cosx$ in the form $kcos(x + a)°$

APPLYING QUESTIONS

1. (a) Write $2sinx + \sqrt{5}cosx$ in the form $ksin(x + a)°$ where $k > 0, 0 \le a \le 360$

   (b) State the minimum value of $y = 2sinx + \sqrt{5}cosx + 4$ and the value of x where it occurs.

2. (a) Express $4cosx - 3sinx$ in the form $kcos(x + a)$ where $k > 0, 0 \le a \le 2\pi$

   (b) Hence solve $4cosx - sinx = 2sinx - 3$ $(0 \le x \le 2\pi)$