Higher_Wave_Function.

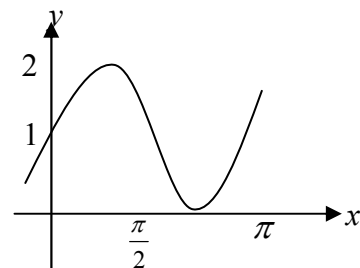1. (a) Express $3\sin x° - \cos x°$ in the form $k\sin(x-\alpha)°$, where $k > 0$ and $0 \le \alpha \le 90$. *(4)*

   (b) Hence find algebraically the values of x between 0 and 180 for which $3\sin x° - \cos x° = \sqrt{5}$ *(4)*

   (c) Find the range of values of x between 0 and 180 for which $3\sin x° - \cos x° \le \sqrt{5}$. *(2)*

2. (a) Express $f(x) = \sqrt{3}\cos x + \sin x$ in the form $k\cos(x-a)$, where $k > 0$ and $0 < a < \dfrac{\pi}{2}$ *(4)*

   (b) Hence or otherwise sketch the graph of $y = f(x)$ in the interval $0 \le x \le 2\pi$ *(4)*

3. The graph shown in the diagram has equation of the form $y = \sin(px) + q$. What are the values of p and q? *(2)*

TOTAL (20)