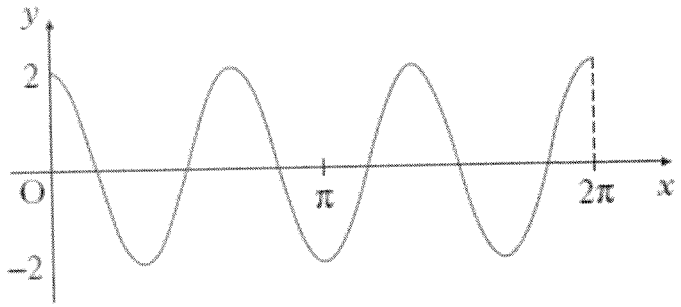
SPOT TEST 1

1. Given that $\underline{u} = \begin{pmatrix} 2 \\ 0 \\ 1 \end{pmatrix}$ and $\underline{v} = \begin{pmatrix} -1 \\ 2 \\ 4 \end{pmatrix}$, find $3\underline{u} - 2\underline{v}$ in component form. (2)

2. The diagram shows the graph with the equation of the form $y = a\cos bx, \ 0 \leq x \leq 2\pi$.
Find the value of a and b. (2)



3. Write $x^2 + 8x + 3$ in the form $(x + p)^2 + q$. (2)

4. The vectors $x\underline{i} + 5\underline{j} + 7\underline{k}$ and $-3\underline{i} + 2\underline{j} - \underline{k}$ are perpendicular. What is the value of x? (2)

Spot Test 1

1. $3\underline{u} - 2\underline{v}$

$= \begin{pmatrix} 6 \\ 0 \\ 3 \end{pmatrix} - \begin{pmatrix} -2 \\ 4 \\ 8 \end{pmatrix}$ ✓ multiplying vectors correctly

$= \begin{pmatrix} 4 \\ -4 \\ -5 \end{pmatrix}$ ✓ correct answer

2. $y = 2\cos 3x$

✓ max and min

i.e. $a = 2$, $b = 3$ ✓ no of waves

3. $x^2 + 8x + 3$

✓ correct "k"

$= (x+4)^2 - 16 + 3$

$= (x+4)^2 - 13$ ✓ correct answer

4. $-3x + 10 - 7 = 0$ ✓ $a \cdot b = 0$

$-3x + 3 = 0$

$3x = 3$

$x = 1$ ✓ correct value for x.