IB SL MATHEMATICS

REVIEW 5

NAME: _____ **DATE:** _____

(a) Express $2\cos^2 x + \sin x$ in terms of $\sin x$ only.

(b) Solve the equation $2\cos^2 x + \sin x = 2$ for x in the interval $0 \le x \le \pi$, giving your answers exactly.

(Total 4 marks)

2. (a) Write the expression $3\sin^2 x + 4\cos x$ in the form $a\cos^2 x + b\cos x + c$.

(b) Hence or otherwise, solve the equation

$$3\sin^2 x + 4\cos x - 4 = 0, \qquad 0° \le x \le 90°.$$

(Total 4 marks)

3. Given that $\sin x = \frac{1}{3}$, where x is an acute angle, find the **exact** value of

(a) $\cos x$;

(b) $\cos 2x$.

(Total 6 marks)

4. Consider the trigonometric equation $2\sin^2 x = 1 + \cos x$.

(a) Write this equation in the form $f(x) = 0$, where $f(x) = a\cos^2 x + b\cos x + c$, and $a, b, c \in \mathbb{Z}$.

(b) Factorize $f(x)$.

(c) Solve $f(x) = 0$ for $0° \le x \le 360°$.

(Total 6 marks)

5. Let $f(x) = a(x - 4)^2 + 8$.

(a) Write down the coordinates of the vertex of the curve of f.

(b) Given that $f(7) = -10$, find the value of a.

(c) Hence find the y-intercept of the curve of f.

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(Total 6 marks)