Math SL EXPLORATION LAB 5

In this assignment, you will revise your quadratic factoring and solving skills and revisit how to apply them to solving trig equations.

Complete the following questions. You will work on the boards and you will take photos of your solutions. ALL questions require algebraic solutions and GRAPHS MAY NOT be used to determine the solutions - i.e. no graphic strategies

1. Factor.

(a) $5x^2 - 10x$

(b) $x^2 + 13x + 40$

(c) $10x^2 - 11x - 6$

(d) $x^2 - 81$

2. Factor.

(a) $\sin^2\theta - \sin\theta$

(b) $\cos^2\theta - 2\cos\theta + 1$

(c) $3\sin^2\theta - \sin\theta - 2$

(d) $4\cos^2\theta - 1$

5. Solve each equation for x, $0 \le x \le 2\pi$.

(a) $(2\sin x - 1)\cos x = 0$

(b) $(\sin x + 1)^2 = 0$

(c) $(2\cos x + \sqrt{3})\sin x = 0$

(d) $(2\cos x - 1)(2\sin x + \sqrt{3}) = 0$

(e) $(\sqrt{2}\cos x - 1)(\sqrt{2}\cos x + 1) = 0$

(f) $(\sin x + 1)(\cos x - 1) = 0$

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7. **(a)** Write $2\sin^2 x - \sin x - 1$ in factored form.

(b) Use the factors from (a) to solve $2\sin^2 x - \sin x - 1 = 0$, $0 \le x \le 2\pi$.

8. **(a)** Write $2\cos^2 x + \cos x - 1$ in factored form.

(b) Use the factors in (a) to solve $2\cos^2 x + \cos x - 1 = 0$, $0° \le x \le 360°$.

9. Solve for x to the nearest degree, $0° \le x \le 360°$.

(a) $2\sin^2 x - \sin x = 0$

(b) $\cos^2 x = \cos x$

(c) $2\tan^2 x + \tan x - 3 = 0$

(d) $6\sin^2 x - \sin x = 1$

(e) $\cos^2 x - 6\cos x + 5 = 0$

(f) $4\sin^2 x - 3 = -\sin x$

12. Solve for θ to the nearest hundredth of a radian, $0 \le \theta \le 2\pi$.

(a) $\cos^2\theta - \sin^2\theta = 1$

(b) $\sin\theta - \cos^2\theta - 1 = 0$

(c) $2\sin - \cos^2\theta = 2$

(d) $13 - 15\sin^2\theta + \cos\theta = 0$