Bellwork Alg 2B Tuesday, May 29, 2018

1. Find all solutions to the nearest hundredth for θ, $0 \leq \theta \leq 2\pi$.

$20\text{Cos}4\theta - 9 = 5$

Find the complete solution to each. Give exact solutions when possible, otherwise, round to the nearest hundredth. Give answers in degrees.

2. $2\text{Cos}\theta - 4\text{Cos}\theta\text{Sin}3\theta = 0$

3. $5\text{Tan}^2\theta + 2\text{Tan}\theta = 3$

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ALG 2B Bellwork Tue 5-29-18 **Answers**

(1) $20\cos 4\theta - 9 = 5$

$+9 \quad +9$

$\frac{20\cos 4\theta}{20} = \frac{14}{20}$

$\cos 4\theta = .7$

$4\theta = \cos^{-1}(.7)$

$\frac{4\theta}{4} = \frac{0.80}{4}$ & $\frac{-0.80}{4}$ $\quad +2\pi$

$\frac{5.48}{4}$

Period $= \frac{2\pi}{4} = \pi/2$

$\theta = 0.20$ & 1.37

1.77 & 2.94

3.34 & 4.51

4.91 & 6.08

(2) $2\cos\theta - 4\cos\theta \sin 3\theta = 0$

$\cos\theta(2 - 4\sin 3\theta) = 0$

$\cos\theta = 0$ & $2 - 4\sin 3\theta = 0$

$\sin 3\theta = 2/4 = 1/2$

period of $\cos\theta = 360°$

$\theta = 90°, 270°$

period of $\sin 3\theta = \frac{360}{3} = 120°$

$\frac{3\theta}{3} = \frac{30°}{3}$ & $\frac{150°}{3}$

$\theta = 10°$ & $50°$

$\theta = 90° + 360°n,\ 270° + 360°n,\ 10° + 120°n,\ 50° + 120°n$

(3) $5\tan^2\theta + 2\tan\theta = 3$

$5\tan^2\theta + 2\tan\theta - 3 = 0$

$(5\tan\theta - 3)(\tan\theta + 1) = 0$

period of $\tan\theta = 180°$

$5\tan\theta - 3 = 0$

$\tan\theta = 3/5$

$\theta = \tan^{-1}(3/5)$

$\theta = 30.96°$ & $210.96°$

$\tan\theta + 1 = 0$

$\tan\theta = -1$

$\theta = 135°$ & $315°$

$\theta = 135° + 180°n$

$315° + 180°n$

$30.96° + 180°n$

$210.96° + 180°n$