GRADE 11_General solutions for Trigonometric equations

11.9 General solutions

1. Calculate the general solutions of the following equations.
(Round all angles off to nearest integer)

(a) $\sin \alpha - 0.242 = 0$

(b) $\tan \beta + 5.145 = 0$

(c) $\cos \lambda - 0.242 = 0$

(d) $\cos \alpha = -0.616$

(e) $\tan \lambda = 1.036$

(f) $\sin \alpha = -0.454$

MEMO

1. Calculate the general solutions of the following equations. [7.6.8.1]
(Round all angles off to nearest integer)

(a) $\sin\alpha - 0.242 = 0$

$\sin\alpha = 0.242$

Reference angle : 14°

sin is positive in the 1st and 2nd quadrants.

1st : $\alpha = 14° + k.360°$

2nd : $\alpha = 166° + k.360°$

(b) $\tan\beta + 5.145 = 0$

$\tan\beta = -5.145$

Reference angle : 79°

tan is negative in the 2nd and 4th quadrants.

2nd : $\beta = 101° + k.180°$

4th : $\beta = 281° + k.180°$

(c) $\cos\lambda - 0.242 = 0$

$\cos\lambda = 0.242$

Reference angle : 76°

cos is positive in the 1st and 4th quadrants.

1st : $\lambda = 76° + k.360°$

4th : $\lambda = 284° + k.360°$

(d) $\cos\alpha = -0.616$

Reference angle : 52°

cos is negative in the 2nd and 3rd quadrants.

2nd : $\alpha = 128° + k.360°$

3rd : $\alpha = 232° + k.360°$

(e) $\tan\lambda = 1.036$

Reference angle : 46°

tan is positive in the 1st and 3rd quadrants.

1st : $\lambda = 46° + k.180°$

3rd : $\lambda = 226° + k.180°$

(f) $\sin \alpha = -0.454$

Reference angle : 27°

sin is negative in the 3rd and 4th quadrants.

3rd : $\alpha = 207° + k.360°$

4th : $\alpha = 333° + k.360°$