The University of the State of New York

EXAMINATION FOR QUALIFYING CERTIFICATES

PLANE TRIGONOMETRY

Wednesday, September 11, 1918—9.15 a. m. to 12.15 p. m., only

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Answer six questions. Papers entitled to less than 75 credits will not be accepted.

1 Prove $\sin^2 A + \cos^2 A = 1$

$$\tan A = \frac{\sin A}{\cos A}$$

$$\cos 2A = \cos^2 A - \sin^2 A$$

2 Prove that $\cos^4 A - \sin^4 A = 1 - 2\sin^2 A$

3 Solve for values of x less than $360°$

$$2\cos^2 x + 5\sin x - 4 = 0$$

4 Find the angle subtended by a man 6 feet tall at a distance of 235 feet 8 inches.

5 The sides of a triangular piece of ground are 138 feet, 246 feet and 321 feet respectively; find the value of the greatest angle.

6 Find the radius of the parallel passing through a point on the earth's surface whose latitude is $43° 15'$, the radius of the earth being 3956 miles.

7 Solve $\cos x - \sin 3x = \cos 2x$