

Problem 1 (12%). Convert from degrees to radians and from radians to degrees:

- a) 300°
- b) $5\pi/6$ rad

Solution.

Problem 2 (12%). Find the radius of the circle if the radius subtending a central angle of 30° has length 12 cm.

Solution.

Problem 3 (16%). Find the exact values of sin, cos, tan for:

- a) $5\pi/3$ rad
- b) $5\pi/6$ rad

Solution.

Problem 4 (14%). If $\sin x = 1/3$ and $\sec y = 5/4$ and x and y lie in the first quadrant

- a) find $\cos(x + y)$
- b) in which quadrant $x + y$ lies?

Solution.

Problem 5 (14%). Prove the identities

a) $\sin(\pi/2 - x) = \cos x$

b) $\tan x \sin x + \cos x = \sec x$

Solution.

Problem 6. (14%) Find all values of x such that $\sin 2x = \sin x$ and $0 \leq x < 2\pi$.

Solution.

Problem 7 (18%). Sketch the graph of

a) $5 \sin(3x - \pi/6)$

b) $3 + \tan 2x$

Solution.