4.1 – Angles and Angle Measure

Radian – one radian is the measure of the central angle subtended in a circle by an arc equal in length to the radius of the circle.

2.

To convert from degrees to radians

 

r

r

1 radian

To convert from radians to degrees

 

180 90

Ex: 1 Draw each angle in standard position. Change each degree measure to radians and each radian measure to degrees.

a) 30˚ b) 120˚

c) radians d) 2.57 radians

Coterminal angles – angles in standard position with the same terminal arm. These may be measured in degrees or radians.

Ex: 2 Determine the quadrant the terminal arm lies. Identify one positive and one negative angle that is coterminal with each angle.

a) 40˚ b) -430˚ c)

General form: An expression containing parameters that can be given specific values to generate any answer that satisfies the given information or situation

Ex: 3 Express the angles coterminal with 110˚ in general form. Identify the angles coterminal with 110˚ that satisfy the domain -720˚≤ θ ≤ 720˚.

Ex: 4 Express the angles coterminal with in general form. Identify the angles coterminal with in the domain -4π≤ θ ≤ 4π.

Arc Length of a Circle: arc =

Ex: 5 Find the arc length subtended by an angle of radians, if the radius is equal to 14 cm.

Ex: 6 A bicycle wheel has radius 40 cm. Determine the distance the wheel will roll when it turns through .Express the exact distance in terms of .