Chapter 4 Prerequisite Skills

Primary and Reciprocal Trigonometric Ratios

1. An exact value for a trigonometric ratio is given for each angle. Determine the exact values of the other two primary trigonometric ratios.

   a) $\tan \theta = -\dfrac{4}{3}$, $270° \le \theta \le 360°$

   b) $\sin \theta = \dfrac{15}{17}$, $90° \le \theta \le 180°$

   c) $\cos x = -\dfrac{24}{25}$, $180° \le x \le 270°$

2. An exact value for a reciprocal trigonometric ratio is given for each angle. Determine the exact values for the other two reciprocal trigonometric ratios.

   a) $\sec \theta = -\dfrac{25}{24}$, $90° \le \theta \le 180°$

   b) $\csc x = -\dfrac{5}{3}$, $270° \le x \le 360°$

   c) $\cot \theta = \dfrac{12}{5}$, $180° \le \theta \le 270°$

3. Use a calculator to evaluate each trigonometric ratio, rounded to four decimal places.

   a) $\sin 26°$ **b)** $\cos 93°$
   c) $\tan 105°$ **d)** $\sin 190°$
   e) $\cos 257°$ **f)** $\tan 350°$
   g) $\csc 65°$ **h)** $\sec 116°$
   i) $\cot 205°$ **j)** $\csc 142°$
   k) $\sec 182°$ **l)** $\cot 323°$

4. Use a calculator to determine angle x, rounded to the nearest degree.
   a) $\cos x = 0.5693$
   b) $\tan x = 1.381$
   c) $\csc x = 3.05$
   d) $\sec x = -\dfrac{12}{5}$

Distance Between Two Points

5. Use the distance formula to determine the exact distance between the points in each pair.
   a) P(–2, 7) and Q(4, 1)
   b) M(–5, –3) and N(6, –5)

Product of Two Binomials

6. Expand and simplify each product.
   a) $(f + g)(f + g)$
   b) $(m - n)(m + n)$
   c) $(5a + b)(6a - 7b)$
   d) $(\sin x - \cos y)(\sin x - \cos y)$

Trigonometric Identities

7. Use a calculator to verify that the Pythagorean identity $\sin^2 x + \cos^2 x = 1$ is true for $x = 50°$, $120°$, $220°$, and $310°$.