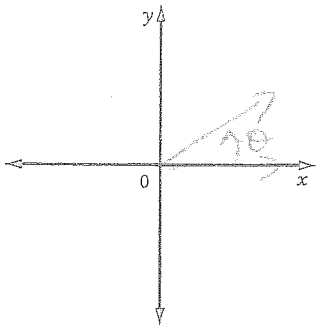
2.1 Angles in Standard Position, pages 56–67

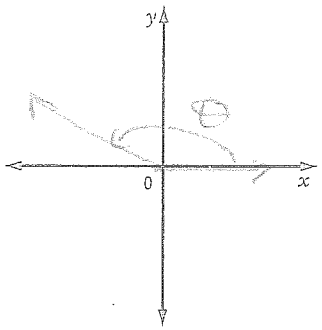
1. Sketch each angle in standard position. State which quadrant the angle terminates in and the measure of the reference angle.

a) 35° b) 165° c) 216°



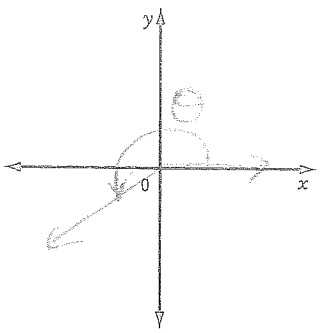
quadrant I

θ_R = 35°



quadrant II

θ_R = 15°

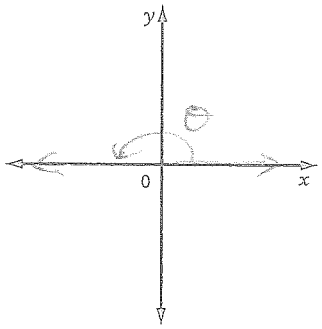


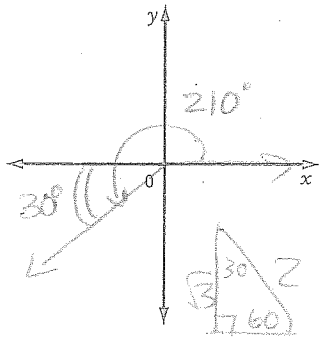
quadrant III

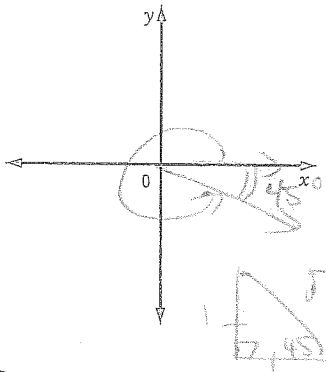
θ_R = 36°

2. Determine the exact value of the following ratios without using technology.

a) cos 180° = −1 b) tan 210° = $\frac{1}{\sqrt{3}}$ c) sin 315° = $-\frac{1}{\sqrt{2}}$

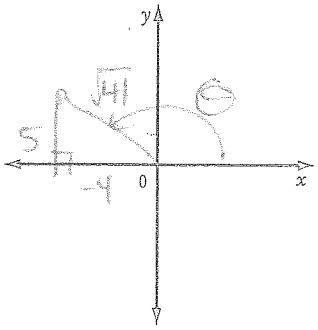






2.2 Trigonometric Ratios of Any Angle, pages 68–79

3. A point P(−4, 5) lies on the terminal arm of an angle θ in standard position. Determine the exact trigonometric ratios for sin θ, cos θ, and tan θ.

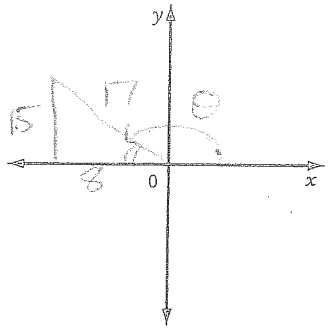


$\sin\theta = \frac{5}{\sqrt{41}}$

$\cos\theta = -\frac{4}{\sqrt{41}}$

$\tan\theta = -\frac{5}{4}$

4. Suppose θ is an angle in standard position with terminal arm in quadrant II and $\sin\theta = \frac{15}{17}$. Determine the exact values of the other two primary trigonometric ratios.



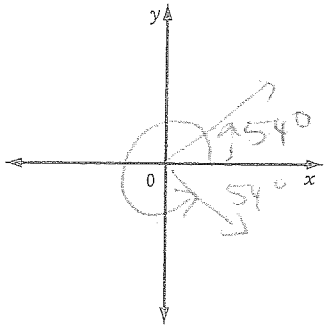
$\cos\theta = -\frac{8}{17}$

$\tan\theta = -\frac{15}{8}$

5. Solve for θ, $0° \le \theta < 360°$.

a) $\cos\theta = 0.5877$ $\theta = 54°$ or $306°$

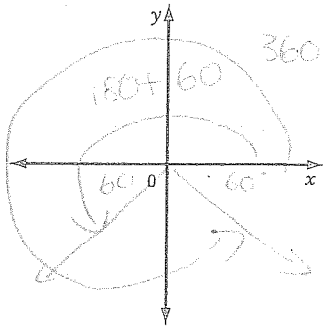
$\theta = 54°$



b) $\sin\theta = -\frac{\sqrt{3}}{2}$ QIII + QIV $\theta = 60°$

$360 - 60$

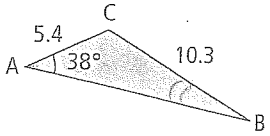
$\theta =$ so $240°, 300°$



2.3 The Sine Law, pages 81–93

6. Find the indicated side or angle.

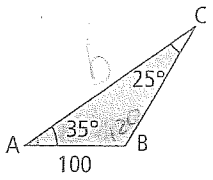
a) $\angle B =$ 18.8



$\frac{\sin B}{5.4} = \frac{\sin 38}{10.3}$

$\angle B =$

b) side $b =$ 20.9



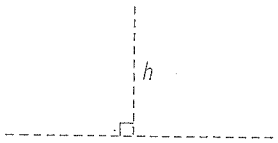
$\frac{b}{\sin 120} = \frac{100}{\sin 25}$

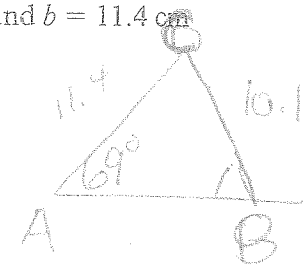
$b = 20.9$

Acute

7. Determine how many $\triangle ABC$s satisfy the following conditions.

a) $\angle A = 69°$, $a = 10.1$ cm, and $b = 11.4$ cm



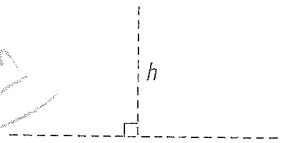


$\frac{\sin B}{11.4} = \frac{\sin 69}{10.1}$

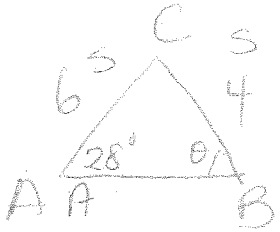
No Soln

b) $\angle A = 28°$, $a = 4$, and $b = 6$

Two Sol^n



ASS



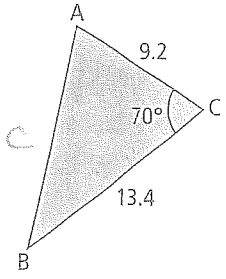
$\frac{\sin B}{6} = \frac{\sin 28}{4}$

$B = 44.77°$

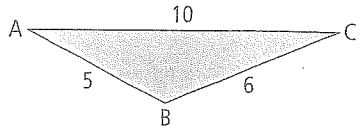
2.4 The Cosine Law, pages 94–102

8. Find the indicated side or angle.

a) side $c =$ 13.41



b) $\angle A =$ 27.1°



a) $c^2 = 13.4^2 + 9.2^2 - 2(13.4)(9.2)\cos 70$

$c =$

b) $6^2 = 5^2 + 10^2 - 2(5)(10)\cos A$

$\angle A = 27.1°$