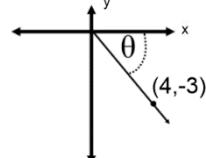
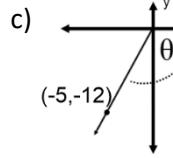
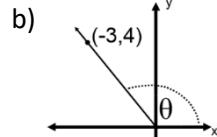
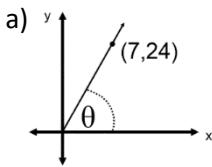


## MCR3U 4.1 B Homework Handout

1. Draw a sketch of each angle in standard position and determine the related acute angle.

a)  $120^\circ$       b)  $-60^\circ$       c)  $135^\circ$       d)  $-225^\circ$       e)  $210^\circ$

2. For each angle  $\theta$  point on the given terminal, calculate the primary trigonometric ratios (sin, cos and tan) for  $\theta$ .



3.  $\alpha$  is an angle in the third quadrant and  $\cos\alpha = \frac{-\sqrt{3}}{2}$

- a) Write the co-ordinates of a point on the terminal arm.  
b) Find  $\sin\alpha$  and  $\tan\alpha$ .

4. Given that  $\cos\theta = -\frac{7}{25}$

- a) In which quadrants is it possible for the terminal arm to lie? (Include a diagram for each)  
b) Calculate values of  $\sin\theta$ .

5.  $\beta$  is an angle in standard position and  $\sin\beta = \frac{4}{5}$

- a) In which quadrants is it possible for the terminal arm to lie? (Include a diagram for each)  
b) Calculate values for  $\cos\beta$  and  $\tan\beta$ .

6. If  $\sin\theta = -\frac{8}{17}$ , find two values of  $\cos\theta$ .

7. If  $\sin\theta = -\frac{3}{5}$  prove that  $\sin^2\theta + \cos^2\theta = 1$ .

8. Determine a value of  $\theta$  for each of the following between the stated angles. Round to the nearest degree.

a)	$0^\circ$ and $90^\circ$	i) $\tan\theta = 2.3$	ii) $\sin\theta = 0.3$	iii) $\cos\theta = 0.2$	iv) $\tan\theta = 0.8$
b)	$90^\circ$ and $180^\circ$	i) $\tan\theta = -0.35$	ii) $\cos\theta = -0.58$	iii) $\tan\theta = -1.25$	iv) $\sin\theta = 0.75$
c)	$180^\circ$ and $270^\circ$	i) $\tan\theta = 2.21$	ii) $\cos\theta = -0.82$	iii) $\tan\theta = 0.66$	iv) $\sin\theta = -0.45$
d)	$270^\circ$ and $360^\circ$	i) $\tan\theta = -0.83$	ii) $\cos\theta = 0.74$	iii) $\tan\theta = -4.75$	iv) $\sin\theta = -0.19$
e)	$0^\circ$ and $360^\circ$	i) $\tan\theta = 1.37$	ii) $\cos\theta = 0.73$	iii) $\tan\theta = 2.48$	iv) $\sin\theta = 0.82$
		v) $\tan\theta = -0.92$	vi) $\cos\theta = -0.29$	vii) $\tan\theta = -5.7$	viii) $\sin\theta = -0.85$

9. The point  $R(2,6)$  lies on the terminal arm of an angle  $\theta$  in standard position. Determine each of the following.

- a)  $\sin\theta$       b)  $\cos\theta$       c)  $\tan\theta$

10. The point  $S(-3, -5)$  lies on the terminal arm of an angle  $\theta$  in standard position. Determine each of the following.

- a)  $\sin\theta$       b)  $\cos\theta$       c)  $\tan\theta$

11. Point Q is on the terminal arm of angle  $\theta$ . Given that  $\theta$  is in quadrant 1 and  $\cos\theta = \frac{3}{5}$ ;

- a) Draw a sketch of the angle and point Q  
b) Sketch a circle on which Q lies. What is the radius?  
c) Calculate  $\sin\theta$ .  
d) Determine possible coordinates for Q.

12. The angle  $\theta$  is in Q III and  $\sin\theta = -\frac{2}{\sqrt{5}}$ . A point E lies on the terminal arm. Determine possible coordinates for E.

Answers:

- 1a)  $60^\circ$  b)  $60^\circ$  c)  $45^\circ$  d)  $30^\circ$  2) see table below 3a)  $P(-\sqrt{3}, -1)$  b)  $\sin\alpha = -\frac{1}{2}$ ,  $\tan\alpha = \frac{1}{\sqrt{3}}$  4a) QII, QIII b)  $\frac{24}{25}, -\frac{24}{25}$  5a) QI, QII b)  $\pm\frac{3}{5}, \pm\frac{4}{3}$   
6)  $\pm\frac{15}{17}$  7) see solutions 8, 9, 10 ) see table below 11)c)  $\frac{4}{5}$  d) Q(3,4) and any scalar 12) E(1,-2) and any scalar

	#2	a	b	c	d	#9	#10
$\sin\theta$		$\frac{24}{25}$	$\frac{4}{5}$	$-\frac{12}{13}$	$-\frac{3}{5}$	$\frac{3\sqrt{10}}{10}$	$-\frac{5\sqrt{34}}{34}$
$\cos\theta$		$\frac{7}{25}$	$-\frac{3}{5}$	$-\frac{5}{13}$	$\frac{4}{5}$	$\frac{\sqrt{10}}{10}$	$-\frac{3\sqrt{34}}{34}$
$\tan\theta$		$\frac{24}{7}$	$-\frac{4}{3}$	$\frac{12}{5}$	$-\frac{3}{4}$	3	$-\frac{5}{3}$

#8	a)	i) 67	ii) 17	iii) 78	iv) 39
	b)	i) 161	ii) 125	iii) 129	iv) 131
	c)	i) 246	ii) 215	iii) 213	iv) 207
	d)	i) 320	ii) 318	iii) 282	iv) 349
	e)	i) 234, 306	ii) 43, 317	iii) 68, 248	iv) 55, 125
		v) 137, 317	vi) 107, 253	vii) 100, 280	viii) 238, 302

