

Name:.....Nº:.....course:.....

1)

a)	$\frac{x^2 + x}{3} - 1 > -\frac{1 - 2x^2}{6}$
b)	$\frac{(2x - 1)(2x + 1)}{x^2 - 4} \leq 0$

2) Solve the simultaneous inequalities:

$$\begin{cases} 2x - y > 6 \\ 3x + 5y - 10 < 0 \end{cases}$$

3) Convert the following:

- a) 120° to radians (use fractions to express it)
- b) 2.6 radians to degrees
- c)  $3\pi/5$  radians to degrees
- d) 57.87° to radians

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4) Given that  $\pi \leq \alpha \leq 3\pi/2$  and  $\tan \alpha = \frac{1}{\sqrt{3}}$ , find  $\sin \alpha$  and  $\cos \alpha$  (Don't find  $\alpha$  using your calculator)

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5) Calculate all the possible angles in each of the following:

a)  $\cos x = -\frac{\sqrt{3}}{2}$       b)  $\tan x = \sqrt{3}$

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6)

The most powerful lighthouse on Lake Michigan is 50 m tall. Suppose you are in a boat just off the coast. Determine your distance from the base of the lighthouse if the angle from the boat to the top of the lighthouse is 14°

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7) If  $\cos \alpha = 0,6$  and  $0 \leq \alpha \leq \frac{\pi}{2}$ , find the trigonometric ratios of  $(\pi - \alpha)$  and  $(\frac{3\pi}{2} + \alpha)$ . Do not find  $\alpha$  using your calculator. Make a unit circle drawing if you need it.

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8) From a certain spot, the top of a flagpole has an angle of elevation of  $30^\circ$ . Move 10m in a straight line towards the flagpole. Now the top has an angle of elevation of  $50^\circ$ . Find the height of the flagpole and its distance from the second point.

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9) You are stationed at a radar base and you observe an unidentified plane at an altitude  $h = 1000$  m flying towards your radar base at an angle of elevation =  $30^\circ$ . After exactly one minute, your radar sweep reveals that the plane is now at an angle of elevation =  $60^\circ$  maintaining the same altitude. What is the speed (in m/s) of the plane?

1	2	3	4	5	6	7	8	9
1,5	1	1	1	1	1	1	1	1,5