
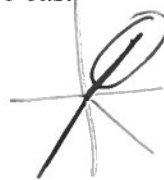




Devoir La Trigonométrie Leçon 2

1. Indique dans quel quadrant se trouve le côté terminal de l'angle θ dans chaque cas.

- a) $\cos \theta < 0$ et $\sin \theta > 0$  Q II
- b) $\cos \theta > 0$ et $\tan \theta > 0$  Q I
- c) $\sin \theta < 0$ et $\cos \theta < 0$  Q III
- d) $\tan \theta < 0$ et $\cos \theta > 0$  Q IV

2. Trace un angle en position standard dont le côté terminal passe par le point indiqué. Détermine les 3 rapports trigonométriques. ($\sin \theta$, $\cos \theta$, $\tan \theta$)

a) (12, 5)



$$12^2 + 5^2 = r^2$$

$$144 + 25 = r^2$$

$$\sqrt{169} = \sqrt{r^2}$$

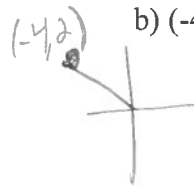
$$13 = r$$

$$\sin \theta = \frac{5}{13}$$

$$\cos \theta = \frac{12}{13}$$

$$\tan \theta = \frac{5}{12}$$

b) (-4, 2)



$$(-4)^2 + (2)^2 = r^2$$

$$16 + 4 = r^2$$

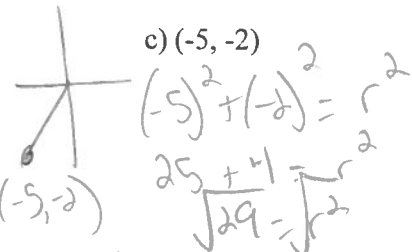
$$\sqrt{20} = \sqrt{r^2}$$

$$\sqrt{4 \cdot 5} = r$$

$$2\sqrt{5} = r$$

$$\sin \theta = \frac{2}{2\sqrt{5}} = \frac{1}{\sqrt{5}}$$

c) (-5, -2)



$$(-5)^2 + (-2)^2 = r^2$$

$$25 + 4 = r^2$$

$$\sqrt{29} = \sqrt{r^2}$$

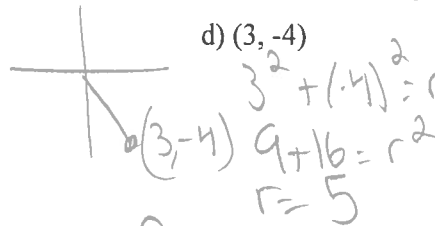
$$r = \sqrt{29}$$

$$\sin \theta = \frac{-2}{\sqrt{29}}$$

$$\cos \theta = \frac{-5}{\sqrt{29}}$$

$$\tan \theta = \frac{-2}{-5} = \frac{2}{5}$$

d) (3, -4)



$$3^2 + (-4)^2 = r^2$$

$$9 + 16 = r^2$$

$$r = 5$$

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

$$\cos \theta = \frac{3}{5}$$

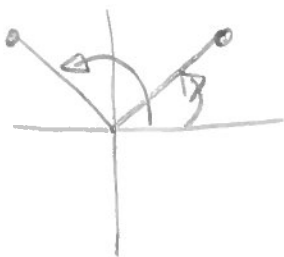
$$\tan \theta = \frac{-4}{3}$$

$$\sin \theta = \frac{-4}{5} = -\frac{2}{\sqrt{5}}$$

$$\tan \theta = \frac{2}{-4} = -\frac{1}{2}$$

3. Soit un angle, θ , en position standard tel que $\sin \theta = \frac{5}{13}$.

a) Fais un schéma pour montrer les deux positions possibles de l'angle et détermine $\cos \theta$ et $\tan \theta$.



$$x^2 = r^2 - y^2$$

$$x^2 = 13^2 - 5^2$$

$$x^2 = 169 - 25$$

$$\sqrt{x^2} = \sqrt{144}$$

$$x = \pm 12$$

$$\tan \theta = \frac{5}{12}$$

$$\cos \theta = \frac{-12}{13}, \cos \theta = \frac{12}{13}$$

b) Détermine les valeurs possibles de θ , au degré près, si $0^\circ \leq \theta < 360^\circ$.

$$\sin^{-1}\left(\frac{5}{13}\right) = \theta$$

$$\theta = 23^\circ$$

$$\theta = 180^\circ - 23^\circ$$

$$\theta = 157^\circ$$

4. Détermine la valeur exacte des deux autres rapports trigonométriques.

a) $\cos \theta = -\frac{2}{3}$, Quadrant II

$$3^2 - (-2)^2 = y^2$$

$$9 - 4 = y^2$$

$$5 = y^2$$

$$y = \sqrt{5}$$

$$\sin \theta = \frac{\sqrt{5}}{3}$$

$$\tan \theta = -\frac{\sqrt{5}}{2}$$

b) $\sin \theta = \frac{3}{5}$, Quadrant I

$$5^2 - 3^2 = x^2$$

$$25 - 9 = x^2$$

$$\pm \sqrt{16} = \sqrt{x^2}$$

$$x = 4$$

$$\cos \theta = \frac{4}{5}$$

$$\tan \theta = \frac{3}{4}$$

c) $\tan \theta = -\frac{4}{5}$, Quadrant IV

$$(5)^2 + (-4)^2 = r^2$$

$$25 + 16 = r^2$$

$$\sqrt{41} = \sqrt{r^2}$$

$$r = \sqrt{41}$$

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

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

d) $\sin \theta = -\frac{1}{3}$, Quadrant III

$$(3)^2 - (-1)^2 = x^2$$

$$9 - 1 = x^2$$

$$\pm \sqrt{8} = \sqrt{x^2}$$

$$-2\sqrt{2} = x$$

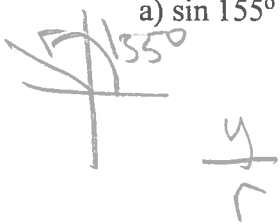
$$\tan \theta = \frac{1}{\sqrt{8}}$$

ou $\frac{1}{2\sqrt{2}}$

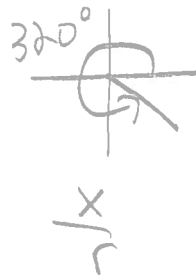
$$\cos \theta = -\frac{\sqrt{8}}{3}$$

5. Sans utiliser ta calculatrice, établis si chaque rapport trigonométrique est positif ou négatif.

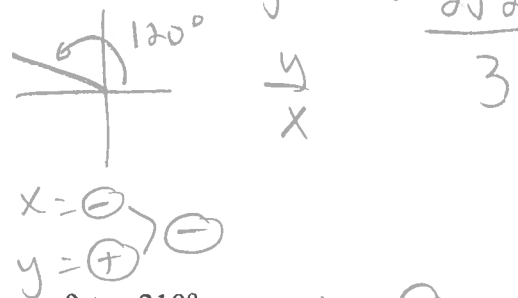
a) $\sin 155^\circ = \text{positive}$



b) $\cos 320^\circ = \text{positive}$



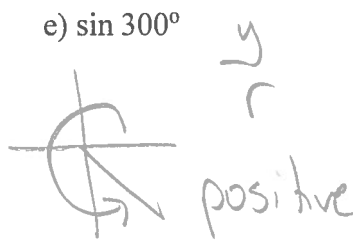
c) $\tan 120^\circ = \text{négative ou } -\frac{2\sqrt{3}}{3}$



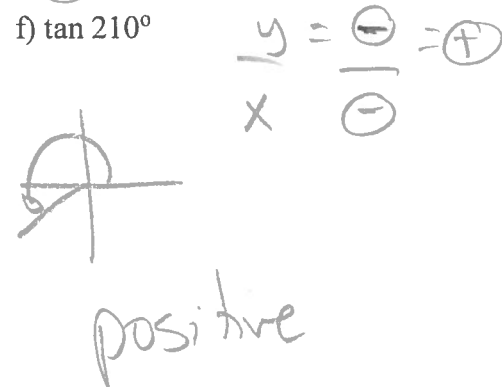
d) $\cos 280^\circ = \text{négative}$



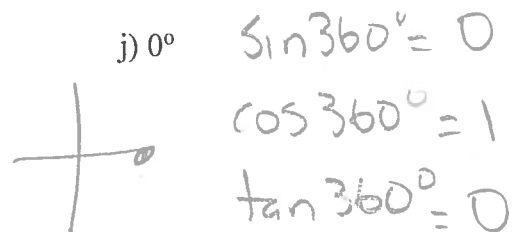
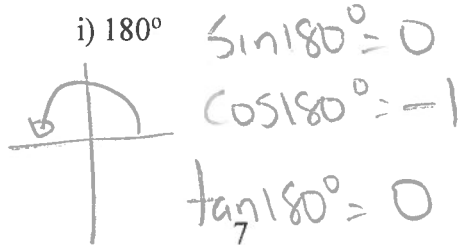
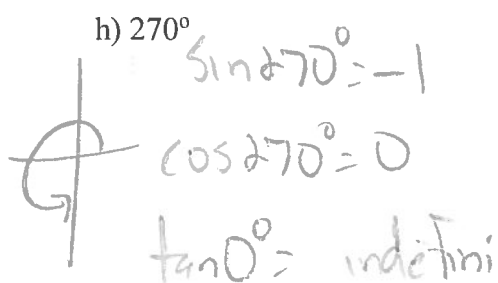
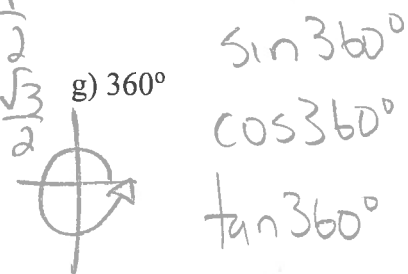
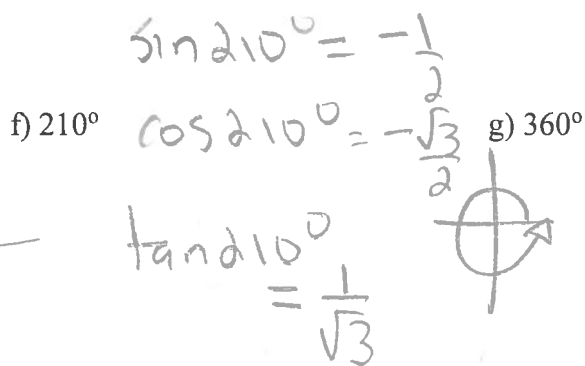
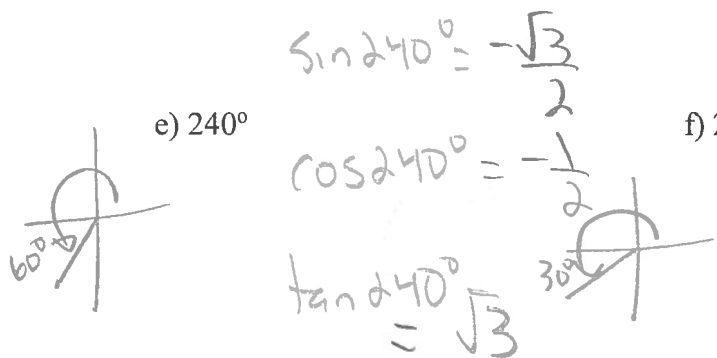
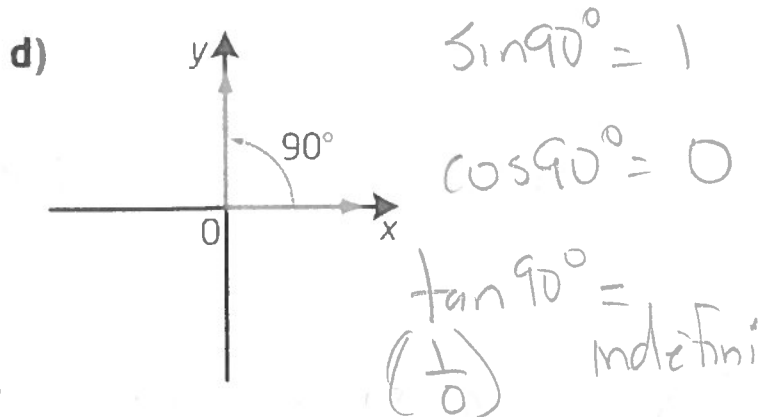
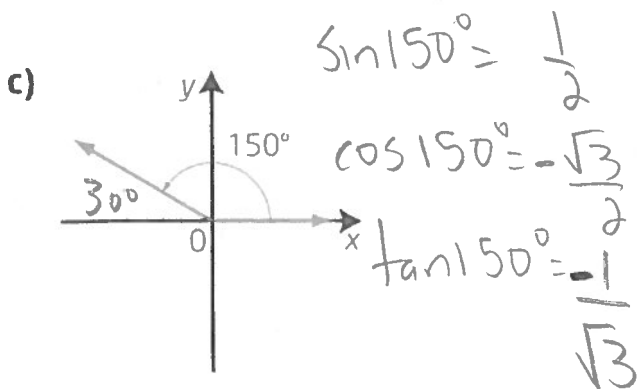
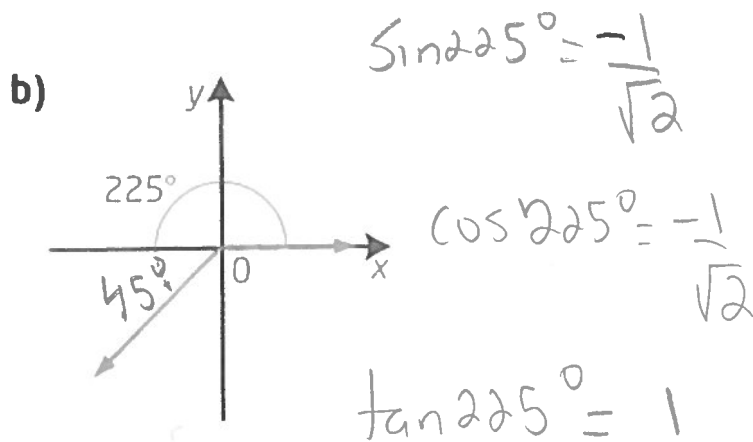
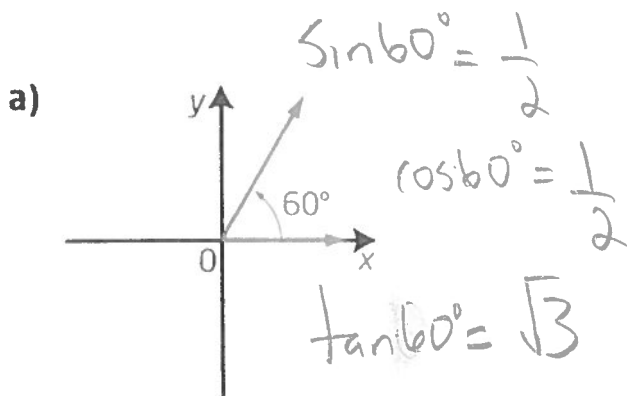
e) $\sin 300^\circ = \text{positive}$

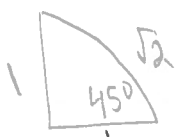
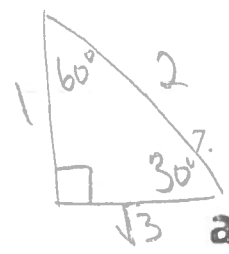


f) $\tan 210^\circ = \text{positive}$



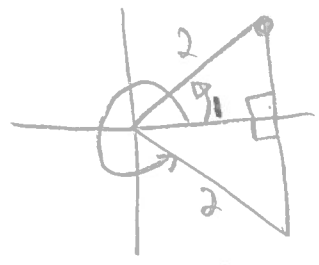
6. Détermine la valeur exacte du sinus, du cosinus et de la tangente de chaque angle. (pas de calculatrice)





7. Résous chaque équation, $0^\circ \leq \theta < 360^\circ$ à l'aide du schéma d'un triangle rectangle particulier.

a) $\cos \theta = \frac{1}{2}$



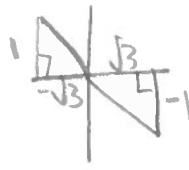
$\theta = 60^\circ$
 $\theta = 360^\circ - 60^\circ$
 $\theta = 300^\circ$

b) $\cos \theta = -\frac{1}{\sqrt{2}}$



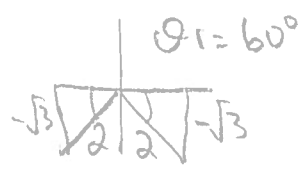
$\theta_r = 45^\circ$
 $\theta = 180^\circ - 45^\circ = 135^\circ$
 $\theta = 180^\circ + 45^\circ = 225^\circ$

c) $\tan \theta = -\frac{1}{\sqrt{3}}$



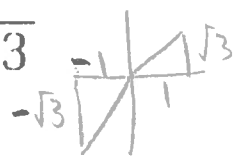
$\theta_r = 30^\circ$
 $\theta = 180^\circ - 30^\circ = 150^\circ$
 $\theta = 360^\circ - 30^\circ = 330^\circ$

d) $\sin \theta = -\frac{\sqrt{3}}{2}$



$\theta_r = 60^\circ$
 $\theta = 180^\circ + 60^\circ = 240^\circ$
 $\theta = 360^\circ - 60^\circ = 300^\circ$

e) $\tan \theta = \sqrt{3}$



$\theta_r = 60^\circ$

$\theta = 60^\circ$
 $\theta = 180^\circ + 60^\circ = 240^\circ$

f) $\tan \theta = -1$



$\theta_r = 45^\circ$

$\theta = 180^\circ - 45^\circ = 135^\circ$
 $\theta = 360^\circ - 45^\circ = 315^\circ$

g) $\sin \theta = \frac{1}{2}$



$\theta_r = 30^\circ$
 $\theta = 30^\circ$
 $\theta = 150^\circ$

h) $\cos \theta = -\frac{\sqrt{3}}{2}$



$\theta_r = 30^\circ$
 $\theta = 150^\circ$
 $\theta = 210^\circ$

i) $\cos \theta = 1$



$\theta = 0^\circ, 360^\circ$

j) $\sin \theta = -1$



$\theta = 270^\circ$

k) $\cos \theta = 0$



$\theta = 90^\circ$
 $\theta = 270^\circ$

l) $\sin \theta = 0$



$\theta = 0^\circ, 180^\circ, 360^\circ$

8. Résous chaque équation pour $0^\circ \leq \theta < 360^\circ$ au degré près. (calculatrice)

a) $\sin \theta = 0,7760$



$\sin^{-1}(0,7760) = \theta_r$

$\theta_r = 51^\circ$

$\theta = 51^\circ$

$\theta = 180^\circ - 51^\circ = 129^\circ$

b) $\cos \theta = -0,8090$



$\cos^{-1}(0,8090) = \theta_r$

$\theta_r = 36^\circ$

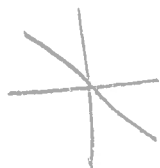
$\theta = 180^\circ - 36^\circ$

$\theta = 180^\circ + 36^\circ$

$\theta = 144^\circ$

$\theta = 216^\circ$

c) $\tan \theta = -0,9004$



$y/x = \frac{-}{+} = \ominus$
 $= \frac{+}{-} = \ominus$

$\tan^{-1}(0,9004) = \theta_r$

$\theta_r = 42^\circ$

$\theta = 180^\circ - 42^\circ$ $\theta = 360^\circ - 42^\circ$

$\theta = 138^\circ$ $\theta = 318^\circ$

d) $\sin \theta = -0,9848$



$\theta_r = \sin^{-1}(0,9848)$

$\theta_r = 80^\circ$

$\theta = 180^\circ + 80^\circ = 260^\circ$

$\theta = 360^\circ - 80^\circ = 280^\circ$

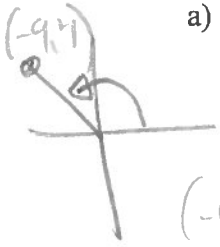
9. Remplis le tableau à l'aide des coordonnées d'un point situé sur le côté terminal.

θ	$\sin \theta$	$\cos \theta$	$\tan \theta$
0°	0	1	0
90°	1	0	indéfini
180°	0	-1	0
270°	-1	0	indéfini
360°	0	1	0

10. Le point P(-9,4) se situe sur le côté terminal de l'angle θ .

a) Trace l'angle en position standard.

b) Quelle est la mesure de l'angle de référence au degré près?



$$\sin \theta = \frac{4}{\sqrt{97}}$$

$$\cos \theta = \frac{-9}{\sqrt{97}}$$

$$\tan \theta = \frac{-4}{9}$$

$$\tan^{-1}\left(\frac{4}{9}\right) = \theta_r$$

$$\theta_r = 24^\circ$$

c) Quelle est la mesure de l'angle θ , au degré près?

$$\theta = 180^\circ - 24^\circ = 156^\circ$$

11. Le point P(7,-24) se situe sur le côté terminal de l'angle θ .

a) Trace l'angle en position standard.

b) Quelle est la mesure de l'angle de référence au degré près?



$$\tan \theta = \frac{-24}{7}$$

$$\tan^{-1}\left(\frac{24}{7}\right) = \theta_r$$

$$\theta_r = 74^\circ$$

c) Quelle est la mesure de l'angle θ , au degré près?

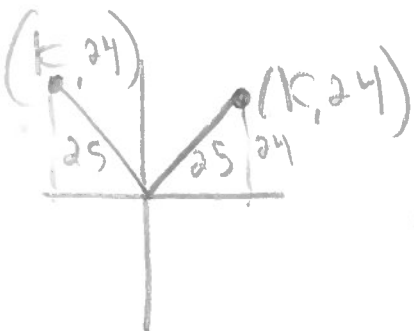
$$\theta = 360^\circ - 74^\circ$$

$$\theta = 286^\circ$$

12. Le point P(k, 24) se trouve à 25 unités de l'origine. Si le point P est situé sur le côté terminal d'un angle θ en position standard, où $0^\circ \leq \theta < 360^\circ$, détermine :

a) la ou les mesures de l'angle θ

b) le sinus, le cosinus et la tangente de l'angle θ .



$$\sin \theta = \frac{24}{25}$$

$$25^2 - 24^2 = x^2$$

$$625 - 576 = x^2$$

$$\pm \sqrt{49} = \sqrt{x^2}$$

$$\pm 7 = x = k$$

$$\sin \theta = \frac{24}{25}$$

$$\cos \theta = \frac{\pm 7}{25}$$

$$\tan \theta = \frac{\pm 24}{7}$$

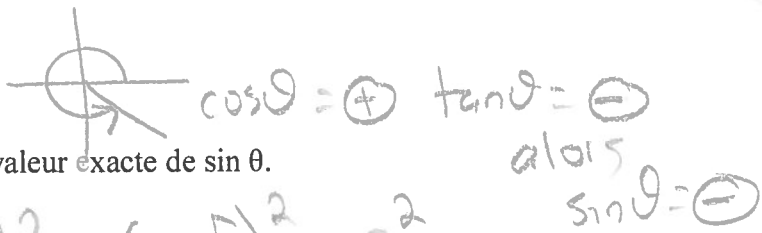
$$\sin^{-1}\left(\frac{24}{25}\right) = \theta_r$$

$$\theta_r = 74^\circ$$

$$\theta = 74^\circ$$

$$\text{ou } \theta = 180^\circ - 74^\circ = 106^\circ$$

13. Soit $\cos \theta = \frac{1}{5}$ et $\tan \theta = -2\sqrt{6}$. Détermine la valeur exacte de $\sin \theta$.



$x = 1$
 $y = -2\sqrt{6}$
 $r = 5$

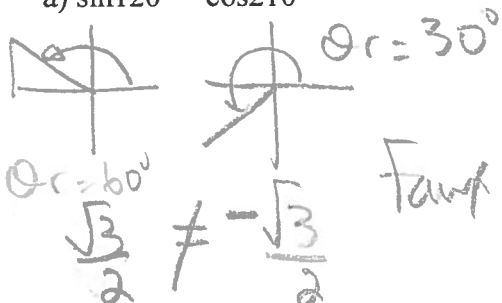
(1/5)

$1^2 + (-2\sqrt{6})^2 = r^2$
 $1 + 4 \cdot 6 = r^2$
 $25 = r^2$
 $5 = r$

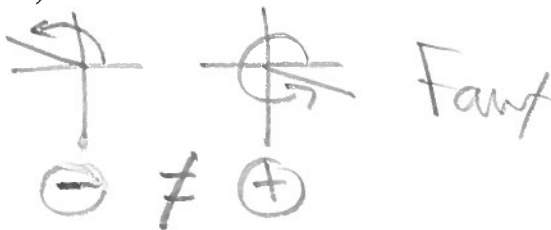
$\sin \theta = \frac{-2\sqrt{6}}{5}$

14. Indique si chaque énoncé est vrai ou faux. Justifie tes réponses (pas de calculatrice!!).

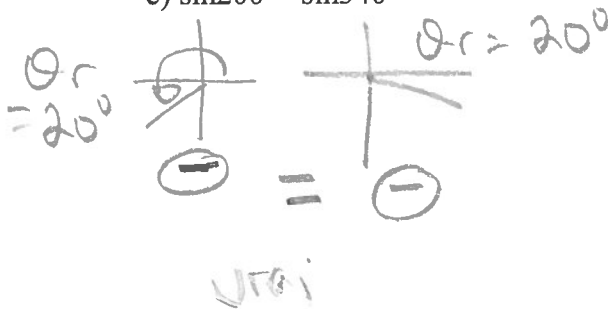
a) $\sin 120^\circ = \cos 210^\circ$



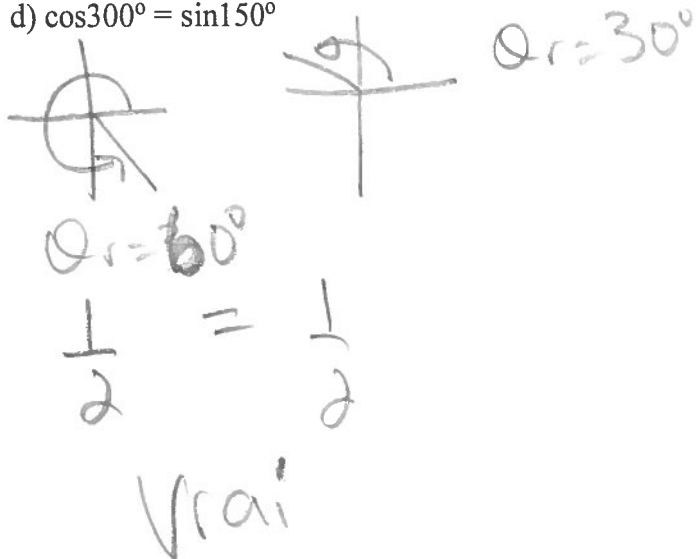
b) $\cos 170^\circ = \cos 350^\circ$



c) $\sin 200^\circ = \sin 340^\circ$



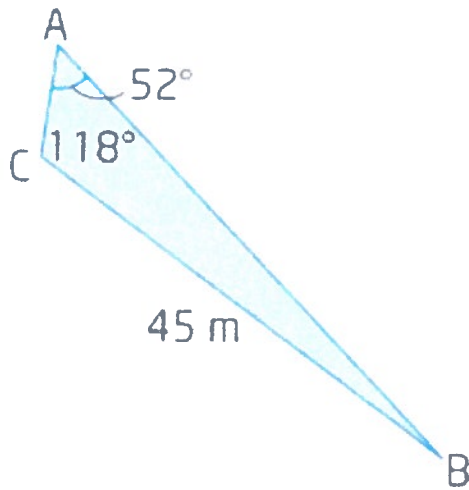
d) $\cos 300^\circ = \sin 150^\circ$



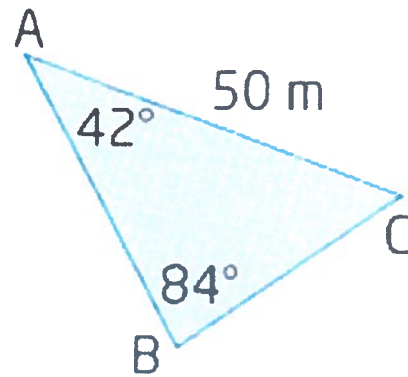
Devoir La Trigonométrie Leçon 3

1. Détermine la longueur des côtés AB.

a)



b)



2. Détermine l'angle A.

