

NO CALCULATOR!

1. Show that the point $\left(-\frac{2\sqrt{2}}{3}, -\frac{1}{3}\right)$ is on the unit circle.

Reminder: equation of a circle with center at origin is $x^2 + y^2 = r^2$

2. The point P(x, y) is on the unit circle in Quadrant III. If $x = -\frac{\sqrt{11}}{6}$, find y.

3. Find the **reference number** and the **terminal point** P(x, y) determined by $t = \frac{11\pi}{6}$

4. Find the exact values using the unit circle:

a) $\sin\frac{9\pi}{2}$ b) $\cos\left(-\frac{9\pi}{2}\right)$ c) $\tan\frac{5\pi}{3}$ d) $\csc\left(-\frac{11\pi}{4}\right)$ e) $\sec\frac{3\pi}{4}$ f) $\cot\left(-\frac{7\pi}{4}\right)$

5. Find **tan t** given that $\sin t = -\frac{3}{4}$ and $\cos t < 0$.

6. Find the values of the trig functions of t if $\sec t = 3$ and terminal point of t is in Quad IV.

7. a) State the amplitude, period, and horizontal shift of the function $y = 2\cos\left(\frac{1}{2}x - \frac{\pi}{6}\right)$

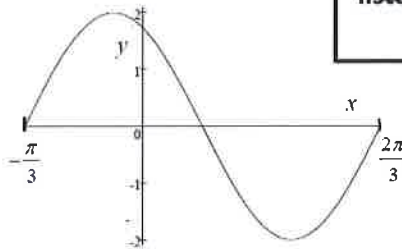
b) State the amplitude, period, and horizontal shift of the function $y = -3\tan\left(2x + \frac{\pi}{4}\right)$

8. Find the exact value using principal values. Show both steps!

a) $\tan\left(\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right)$ b) $\cos\left(\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right)$ c) $\sin(\tan^{-1}(1))$

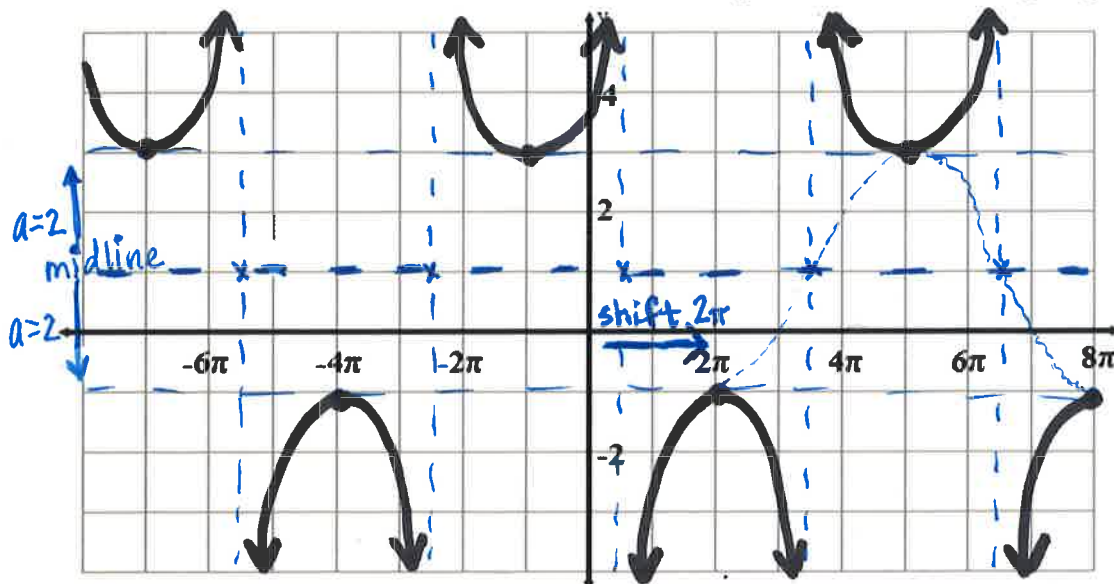
9. The graph shown at right is one period of a function of the form $y = a\sin k(x-b)$. Determine the equation of the function.

$y = 2\sin 2\left(x + \frac{\pi}{3}\right)$



10. Identify the vertical shift, amplitude, period, and horizontal shift. Sketch a **complete** graph from -8π to 8π .

$y = -2\sec\left(\frac{1}{3}x - \frac{2\pi}{3}\right) + 1$ Factored form \rightarrow **$y = -2\sec\frac{1}{3}(x - 2\pi) + 1$**



v.s. = 1 ↑

amp = 2 ↓

per = 6π

h.s. = 2π



REMINDER: Reflect (flip) your graph across the x-axis!!!

2 curves = 1 period of 6π

CHECK ANSWERS:

$-\sqrt{2}$ $-\sqrt{2}$

$-2\sqrt{2}$ $-\sqrt{3}$

$\frac{3\sqrt{2}}{4}$ $\frac{\sqrt{3}}{3}$

$\frac{2\sqrt{2}}{3}$ $\frac{\sqrt{2}}{4}$

$\frac{3\sqrt{7}}{7}$ $\frac{\sqrt{2}}{2}$

0 1 1

1 2 2 3

$\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

$\frac{5}{6}$ $\frac{1}{3}$ $\frac{1}{2}$

$\frac{\pi}{8}$ $\frac{\pi}{2}$ $\frac{\pi}{3}$ $\frac{\pi}{6}$

2π 4π 6π

#9,10 equations listed on key for graph