

Please give all answers in exact, simplest form, unless otherwise specified.

1. For the function $y = 3 - 2 \sin\left(\frac{3\pi}{4}x + \frac{5\pi}{4}\right)$

a. Graph at least one complete cycle

b. Amplitude? 2

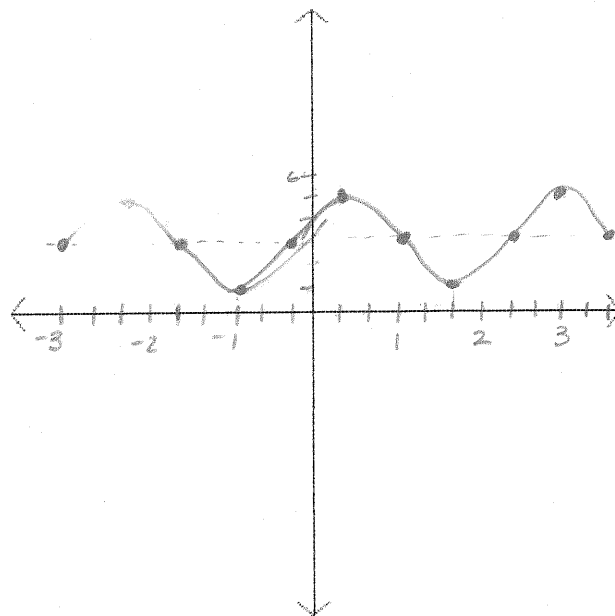
c. Period? $\frac{2\pi}{3\pi/4} = \frac{8}{3}$

d. Phase shift? $\frac{5\pi/4}{3\pi/4}$ left $\frac{5}{3}$

e. Vertical shift?
up 3

f. Maximum value of y?
5

g. Minimum value of y?
1



2. For the function $y = 1 + 2 \cos\left(\frac{1}{2}x - \frac{3\pi}{2}\right)$

a. Graph at least one complete cycle

b. Amplitude? 2

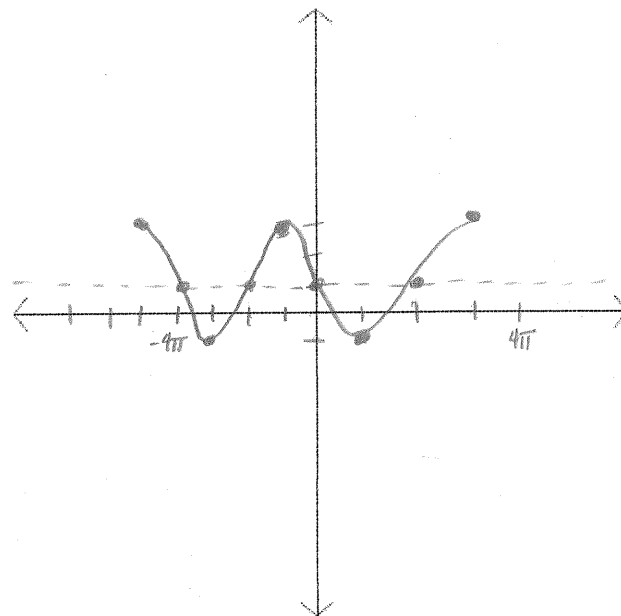
c. Period? $\frac{2\pi}{1/2} = 4\pi$

d. Phase shift? $\frac{3\pi/2}{1/2} = 3\pi$ right

e. Vertical shift?
up 1

f. Maximum value of y?
3

g. Minimum value of y?
-1



3. Give answers in both degrees and radians, where appropriate.

a. $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$ $\frac{\pi}{4}, 45^\circ$

b. $\arccos(1)$ $0, 0^\circ$

c. $\tan^{-1}(\sqrt{3})$ $\frac{\pi}{3}, 60^\circ$



d. $\sin\left(\cos^{-1}\left(-\frac{7}{25}\right)\right)$ $\frac{24}{25}$

e. $\arctan\left(\tan\left(\frac{5\pi}{3}\right)\right)$ $-\frac{\pi}{3}, -60^\circ$

f. $\tan\left(\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)\right)$ -1

4. For the parabola $4x^2 - 32x - y + 61 = 0$

a) Find the vertex

$$4(x^2 - 8x + 16) = y - 61 + 64$$

$$4(x - 4)^2 = y + 3$$

$V(4, -3)$

b) Find the focus

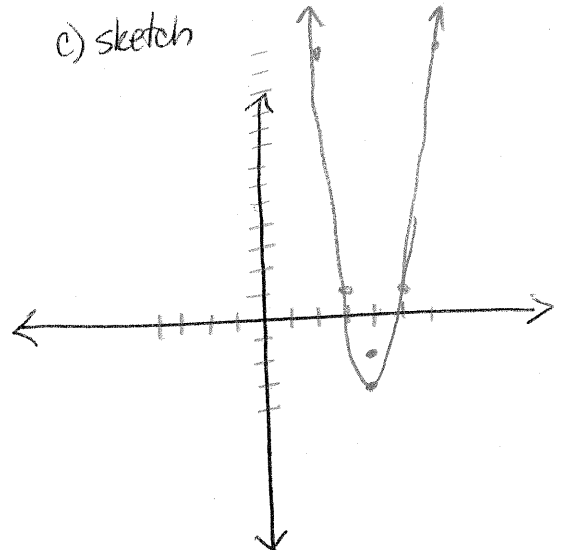
$$(x - 4)^2 = \frac{1}{4}(y + 3)$$

$$4p = \frac{1}{4}$$

$$p = \frac{1}{16}$$

$(4, -3 + \frac{1}{16})$

c) sketch



$$(x-h)^2 = 4p(y-k)$$