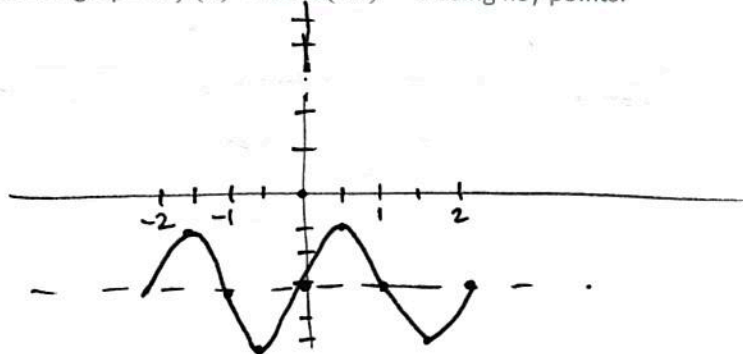
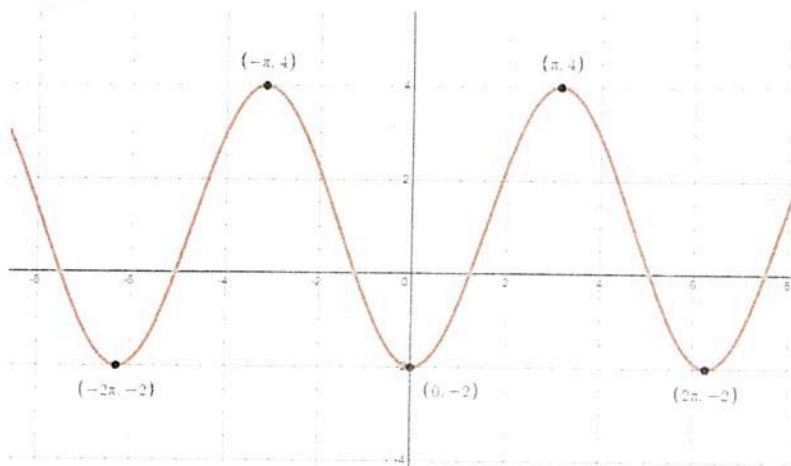


Instructions: Show all work. Use exact answers unless specifically asked to round. Answer all parts of each question.

1. Sketch the graph of  $f(x) = 2 \sin(\pi x) - 3$  using key points.



2. Find an expression for the function shown in the graph below. Values of some key points are noted.



$$\frac{4 - (-2)}{2} = \frac{6}{2} = 3$$

$$y = -3 \cos x + 1$$

3. Sketch the graph of  $g(x) = \tan\left(x - \frac{\pi}{4}\right)$  using key points. State the domain and range. Then give an equation of its inverse. What the domain and range of the inverse?

$$x = \tan(y - \pi/4)$$

$$\tan^{-1} x = y - \pi/4$$

$$\tan^{-1} x + \pi/4 = g^{-1}(x)$$

restricted to one cycle

$$C: (-\pi/4, 3\pi/4)$$

$$D: (-\infty, \infty)$$

asymptotes

$$\pi/2 \rightarrow 3\pi/4$$

$$-\pi/2 \rightarrow -\pi/4$$

