MHF4U
Trigonometric Functions

1. Graph by using transformations.

a) \( y = -\sin(x + \pi/4) + 2 \)

b) \( y = 2\cos\left(\frac{\pi}{2} - 2x\right) \)

c) \( y = -\tan(3x + \pi) \)
2. Describe the transformations involved.

\[ y = -4 \sin \left( \frac{\pi}{2} - 3x \right) + 5 \]

3. Write the equation of the trigonometric function \( y = \cos x \) after the following transformations:

- Reflection in the x-axis
- Vertical compression by 0.5
- Reflection in the y-axis
- Horizontal expansion by 3
- Horizontal shift to the left by \( \pi / 2 \)
- Vertical shift down by 4

4. Graph the following function by using a method at your convenience.

\[ y = -3 \cos \left( \frac{\pi}{2} - 3x \right) + 2 \]
5. Match the equations on the left to the graphs on the right. Some equations may not have a corresponding graph.

| a) $y = -\sin(x + \pi/2) - 1$ | ![Graph I] |
| b) $y = -\sin(x + \pi/2)$ | ![Graph II] |
| c) $y = \sin(x - \pi/2) + 1$ | ![Graph III] |
| d) $y = -\sin x + 2$ | ![Graph IV] |
| e) $y = -\sin x - 2$ | |
| f) $y = \sin(x + \pi/2) - 2$ | |