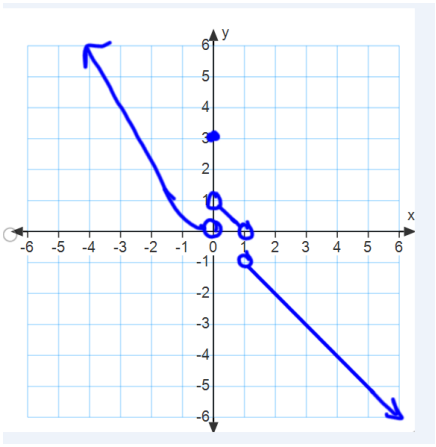
# Recitation #1 Chapter 1 - Precalculus Review

## Warm up:

If $f$ is always increasing, is $f^{-1}$ always increasing?

## Group work:

**Problem 1** *Given the graph of the function $f$ below, answer the following questions.*




(a) *What is the domain of $f$?*

(b) *What is the range of $f$?*

(c) *What is $f(0)$? $f(1)$? $f(2)$?*

(d) *Does $f$ have an inverse? Why or why not?*

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**Problem 2** *Find the inverse $y = f^{-1}(x)$ of the function. State the domain and range of the inverse.*

(a) $f(x) = x^2 - 4x - 5$ *(when $x \geq 2$).*

(b) $f(x) = \sqrt[4]{x+2}$.

(c) $f(x) = \dfrac{1}{(x+2)^2}$ *(when* $x > -2$*).*

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**Problem 3** *Find all values of* $x$ *which satisfy the equation.*

(a) $\log_x 25 = 2$

(b) $7^x = 15$

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**Problem 4** *Find all values which satisfy the given equation.*

(a) $\cos(x) = 1$

(b) $\sin(3\theta) = \dfrac{\sqrt{3}}{2}$ *for* $0 \leq \theta \leq 2\pi$

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**Problem 5** (a) *Simplify the expression:* $\cos^{-1}\left(\sin\left(\dfrac{\pi}{2}\right)\right)$

(b) *Simplify the expression:* $\tan\left(\cos^{-1}\left(\dfrac{4}{x}\right)\right)$

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