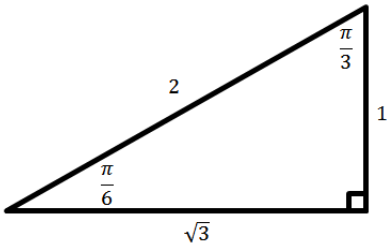
MATH 1300 A, Fall 2013
**Solution Quiz 2**

**1.** (*50 points*) Find each of the following angles:

$\arctan(-\frac{1}{\sqrt{3}}) =$ $\qquad$ $\arccot(-\frac{1}{\sqrt{3}}) =$

First, we need to find an angle $\theta$ in $(-\frac{\pi}{2}, \frac{\pi}{2})$ for which $\tan\theta = -\frac{1}{\sqrt{3}}$.
From the 30-60-90 triangle we know that $\tan(\frac{\pi}{6}) = \frac{1}{\sqrt{3}}$.
Therefore, $\tan(-\frac{\pi}{6}) = -\frac{1}{\sqrt{3}}$. Thus

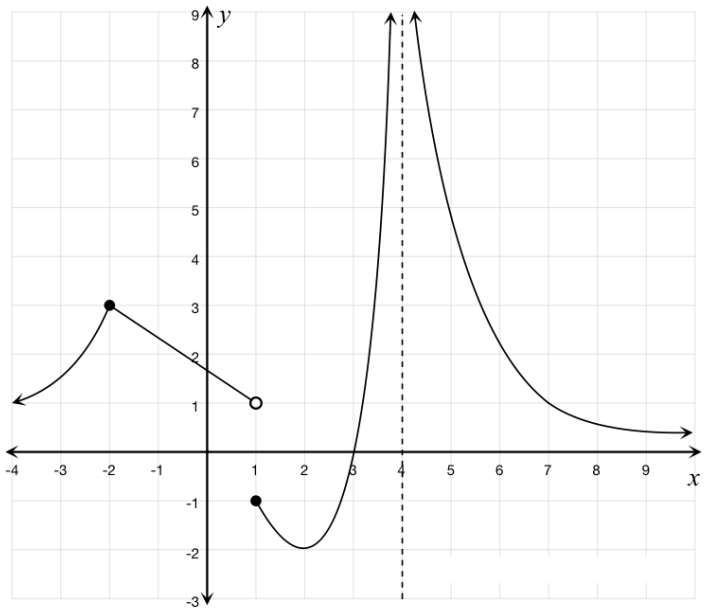



$$\arctan(-\frac{1}{\sqrt{3}}) = -\frac{\pi}{6}$$

Second, we need to find an angle $\theta$ in $(0, \pi)$ for which $\cot\theta = -\frac{1}{\sqrt{3}}$.
From the 30-60-90 triangle we know that $\cot(\frac{\pi}{3}) = \frac{1}{\sqrt{3}}$.
Therefore, $\cot(\pi - \frac{\pi}{3}) = -\frac{1}{\sqrt{3}}$. Thus

$$\arccot(-\frac{1}{\sqrt{3}}) = \pi - \frac{\pi}{3} = \frac{2\pi}{3}$$

**2.** (*50 points*) Find the following limits of the function whose graph is sketched below:




$\lim_{x\to 1^-} f(x) = 1$ $\quad$ $\lim_{x\to 1^+} f(x) = -1$ $\quad$ $\lim_{x\to 1} f(x) =$ does not exist $\quad$ $\lim_{x\to 4} f(x) = \infty$ $\quad$ $\lim_{x\to\infty} f(x) = 0$