2. (30 points) II Find the domain and Sketch the graph of the following function.

\[ f(x) = \begin{cases} 
6 & \quad x \leq -4 \\
|2x + 1| & \quad x > -4
\end{cases} \]

**Domain** = \( \mathbb{R} \)

3. (10 points) Write true or false or fill in the blank based on the course syllabus.

(a) The components of your grades are as follows: **HW** 10%, **Quizze**s 10%, **Exam I** 10%, **Exam II** 20%, **Exam III** 20% and **Final** 30%.

(b) [ ] There will be a weekly quiz to be taken every Thursday, based on the WebAssign homework and lecture notes.

(c) [ ] There will be no make up exams or quizzes unless major reasons prevent you from taking it. Proper justification should be provided.

(d) [ ] A McKinley visit note is a valid justification to excuse a student for missing an assignment.
1. (30 points) I Find the domain and the range of the following function.

\[ \frac{1}{\sqrt{3-t^2}} \]

If \( 3-t^2=0 \) then \( \sqrt{3-t^2}=0 \) and the function is undefined.
Hence \( 3-t^2>0 \) for the function to be defined.

\[ 3-t^2>0 \iff (\sqrt{3}-t)(\sqrt{3}+t)>0 \]

\[
\begin{array}{c|c|c}
\text{} & \sqrt{3} & -
\end{array}
\]

If \( t<-\sqrt{3} \iff (\sqrt{3}-t)(\sqrt{3}-t) \) is negative
\( (+) \quad (-) \)

If \( -\sqrt{3} < t < \sqrt{3} \iff (\sqrt{3}-t)(\sqrt{3}+t) \) is positive
\( (+) \quad (+) \)

If \( t>\sqrt{3} \iff (\sqrt{3}-t)(\sqrt{3}+t) \) is negative
\( (-) \quad (+) \)

Hence Domain = \((-\sqrt{3}, \sqrt{3})\)

The graph of \( \sqrt{3-t^2} \) is so \( \frac{1}{\sqrt{3-t^2}} \) has a minimum

at \( t=0 \). As \( t \) approaches \( \pm \sqrt{3} \) the value of \( \frac{1}{\sqrt{3-t^2}} \) becomes large positive \( \therefore \)

Range = \([-\frac{1}{\sqrt{3}}, \infty)\)

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