Math 104 Practice Test 1

1. Does the equation define y as a function of x?

   a. $y = |x|$

   b. $y^2 = 1 - x^2$

2. Find the domain of $f(x) = \dfrac{2}{x^2 - 4}$.

3. Find $f(-x)$ if $f(x) = \dfrac{x}{x^2 + 1}$.

4. Determine whether $f(x) = \sqrt[3]{x}$ is even, odd or neither.

5. Graph:

   a. $f(x) = \dfrac{1}{x}$

   b. $f(x) = \begin{cases} x + 3 & x < -2 \\ -2x - 3 & x \geq -2 \end{cases}$

   c. $f(x) = |x + 2|$

   d. $f(x) = -\sqrt{x}$

6. Find the inverse of $f(x) = x^3 - 1$.

7. Convert to radians: 150°.

8. Convert to degrees: $7\pi/4$.

9. Find the arc length of a circle of radius 6 cm subtended by a 60° angle.

10. Find the measure of the central angle of a circle of radius 5 miles if the area of the sector is 3 square miles.

11. The minute hand of a clock is 6 inches long. How far does the tip of the minute hand move in 15 minutes?

12. Find the exact value:

a. $\tan\left(-3\pi\right)$

b. $\sin\frac{\pi}{4}-2\cos\frac{\pi}{6}$

13. Find the exact values of all the trigonometric functions of $3\pi/4$.