Algebra Practice Test

1. Given $f(x) = \sqrt[3]{4 - x^2}$ and $g(x) = x^3 + 2$, find $(f \circ g)(x)$.

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

3. Draw a graph of a function with a range $\{y \mid y \geq 2\}$?

4. State the interval $(-6, 8]$ using inequality notation.

5. Graph $y = \begin{cases} \dfrac{4}{x}, & x \neq 0 \\ -2, & x = 0 \end{cases}$.

6. What is the intersection of $\begin{pmatrix} 2r + s = & 5 \\ s = & -5 \end{pmatrix}$?

7. Find a set A and a set B where $A \cap B = \varnothing$ and $A \cup B = \{3, 4, 5, 6, 7, 8\}$.

8. If $9 \in C$ and $C \subseteq D$, then give an example of C and D.

9. If $a_1 = 4$ and $r = \dfrac{1}{2}$, find a_n and $\sum\limits_{n=1}^{\infty} a_n$.

10. Expand $\log_d \dfrac{z}{x^2 y}$.

11. Simplify $\ln e^{y^2} + \log_3 9$.

12. Describe the meaning of $\langle -2, 90° \rangle$.

13. Find $\sin \dfrac{\pi}{4}$.

14. Find $\sin \beta$, if $\cos \beta = \dfrac{4}{5}$.

15. What is $\begin{bmatrix} -3 & 5 \\ -4 & 10 \end{bmatrix} - \begin{bmatrix} -6 & 1 \\ -7 & 2 \end{bmatrix}$?

16. Simplify $\begin{vmatrix} -10 & 3 \\ -8 & 0 \end{vmatrix}$.