CALCULUS I READINESS SELF-DIAGNOSTIC

The following questions are designed to help you self-assess your readiness for Calculus I. These items cover topics from prior mathematics courses that you may need to review in order to maximize your success.

Complete the following without any support:

1) A rectangular box has a square base and a closed top. The height is twice the length of one side of the base. Find the surface area in terms of x.

2) Factor $2x^2 + 7x + 3$

3) Solve the following system for x and y.

$$-x + y = -5$$
$$2x - 5y = 1$$

4) Evaluate $2^{-5} \cdot 64^{2/3}$

5) Let $f(x) = x + 5$ and $g(x) = x^2 + 1$. Simplify $(f \circ f)(x) + g(x)$

6) Without using a calculator, graph $f(x) = (x + 3)^2 + 5$

7) Given $\cos(x) = \frac{3}{5}$ with x in QI, find the exact value of $\sin(2x)$

8) Simplify $\frac{\sin^2(x)}{\tan^2 x} + \frac{\cos^2(x)}{\cot^2(x)}$