22. As a spherical balloon inflates, its radius increases at a rate of 1 centimeter per second. Find the rate that the volume increases when the balloon has a radius of 6 centimeters. (note volume \( V = \frac{4}{3} \pi r^3 \))

*Answer.* \( 144\pi \) dm\(^3\)/sec

23. On which intervals is \( f(x) = x^3 - 3x^2 \) increasing and decreasing?

*Answer.* Increasing on \((-\infty, 0), (2, \infty)\)
Decreasing on \((0, 2)\)

24. Find the absolute (global) extrema of \( g(x) = -2x^2 - 8x + 4 \) on \([-3, 0]\).

*Answer.* Minimum of 4 at \( x = 0 \)
Maximum of 12 at \( x = -2 \)