

CALCULUS 2 - FALL 25 - EXAM 1A

No references. Each question worth two points. Total 50 points = half of Exam 1. True or false:

- 1) If $f(x) \leq g(x)$ on $[a, b]$, then the area between the curves could be written $\int_a^b (f(x) - g(x)) dx$
- 2) For the disk method of determining volume of a figure of revolution about the x-axis
 $dV = \pi[f(x)]^2 dy$
- 3) For the washer method of determining volume of a figure of revolution about the x-axis
 $dV = \pi([f(x)] - [g(x)])^2 dx$
- 4) Rolling a marble across a horizontal frictionless table results in positive work
- 5) For the shell method of determining volume of a figure of revolution about the x-axis
 $dV = 2\pi f(x) dx$
- 6) The formula for differential surface area of a figure of revolution about the x-axis could be
 $dA = 2\pi y \sqrt{1 + \left(\frac{dy}{dx}\right)^2} dx$
- 7) Climbing up a ladder results in gravity doing positive work
- 8) The volume of the figure of revolution generated by $y = f(x)$ from $x = a$ to $x = b$ could be
 $\pi \int_a^b [f(x)]^2 dx$
- 9) The metric unit for moment is newton-meter
- 10) Work done on a spring with spring constant k being stretched x units over neutral length is kx^2
- 11) Force equals pressure times length
- 12) Pressure due to a fluid with mass density ρ at depth x would be ρx
- 13) The volume of the surface of revolution generated by $y = f(x)$ from $x = a$ to $x = b$ could be $2\pi \int_a^b f(x) dx$
- 14) The weighted average of $f(x)$ over the interval $[a, b]$ is $\frac{1}{b-a} \int_a^b f(x) dx$
- 15) The centroid of a planar figure always lies on an axis of symmetry
- 16) The centroid of a thin plate depends on its density
- 17) The center of gravity and centroid of a thin plate are the same if the density of the plate material is constant
- 18) The center of mass and the center of gravity of a thin plate are always the same
- 19) The center of gravity of a thin plate is always located on the plate
- 20) The total force on one side of a submerged thin plate is the plate area times the pressure at the centroid
- 21) A thin plate could be balanced by applying a force equal to its weight at its center of gravity
- 22) Pressure in a liquid at a given depth is the same in all directions
- 23) Pressure in a fluid at depth x is the weight of a column of fluid with constant cross-section A and height x divided by A
- 24) Pappus' Volume Formula involves the distance travelled by the centroid of a cross section
- 25) The elastic potential energy given to a spring by stretching it a distance x from its unstretched length is the same as compressing it the same distance