



6.	<p>Given: <math>I = \int_0^3 \int_0^{\sqrt{9-y^2}} \int_0^{\sqrt{9-x^2-y^2}} z \, dz \, dx \, dy</math>. Set up the integral in</p> <p>a) Cylindrical coordinates.</p> <p style="text-align: right;">Ans: _____.</p>	<p>b) Spherical coordinates.</p> <p style="text-align: right;">Ans: _____.</p>
7.	<p>A lamina with <math>\sigma = \sqrt{x^2 + y^2}</math> is bounded by <math>y = \sqrt{4 - x^2}</math> and <math>y = 0</math>. Set up the integral for <math>I_z</math>:</p> <p>a) In Cartesian coordinates.</p> <p style="text-align: right;">Ans: _____.</p>	<p>b) In polar coordinates.</p> <p style="text-align: right;">Ans: _____.</p>
8.	<p>A tetrahedron has vertices at <math>(0,0,0)</math>, <math>(1,0,0)</math>, <math>(1,1,0)</math> and <math>(1,0,1)</math>. Set up the volume integral</p> <p>a) As a triple integral.</p> <p style="text-align: right;">Ans: _____.</p>	<p>b) Compute the volume by any method.</p> <p style="text-align: right;">Ans: _____.</p>
9.	<p>Find the volume bounded by <math>x^2 + y^2 + z^2 = 4</math> and <math>z = \sqrt{x^2 + y^2}</math>.</p> <p>a) Set up the integral.</p> <p style="text-align: right;">Ans: _____.</p>	<p>b) Compute the integral.</p> <p style="text-align: right;">Ans: _____.</p>
10.	<p>Compute the Jacobian of the following transformations:</p> <p>a) <math>x = r \sinh s</math>, <math>y = r \cosh s</math>.</p> <p style="text-align: right;">Ans: _____.</p>	<p>b) <math>x = u + 2v</math>, <math>y = u - 2v</math>, <math>z = 5w</math>.</p> <p style="text-align: right;">Ans: _____.</p>
	Extra space	