(1 point)

Find the area of the surface obtained by rotating the curve $9x = y^2 + 18,\ 2 \le x \le 6$, about the x-axis.

Area = pi/27*((81+4*6^2)^(3/2)-81^(3/2))

(1 point)

The ellipse

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

is rotated about the x-axis to form a surface called an *ellipsoid*. Find the surface area of this ellipsoid.

Area =

(1 point)

Find the area of the surface obtained by rotating the curve $x = \frac{1}{3}(y^2+2)^{3/2},\ 1 \le y \le 2$, about the x-axis.

Area = 21pi/2

(1 point)

Find the area of the surface obtained by rotating the curve $x = 1 + 2y^2,\ 1 \le y \le 2$, about the x-axis.

Area = pi/24*(65^(3/2)-17^(3/2))

(1 point) Find the area of the surface obtained by rotating the curve

$$y = 1 + 2x^2$$

from $x = 0$ to $x = 7$ about the y-axis.

pi/24*(785^(3/2)-1)

(1 point) Find the area of the surface obtained by rotating the curve

$$y = \sqrt{6x}$$

from $x = 0$ to $x = 3$ about the x-axis.

The area is 4sqrt(6)pi/3*((9/2)^(3/2)-(3/2)^(3/2)) square units.

(1 point) In each part, determine all values of p for which the integral is improper. Enter in interval notation or "none" if there are no relevant values of p.

(a) $\displaystyle\int_0^6 \frac{dx}{x^p}$

p values that make integral improper (1,inf)

(b) $\displaystyle\int_1^2 \frac{dx}{x-p}$

p values that make integral improper

(c) $\displaystyle\int_3^7 e^{-px}\,dx$

p values that make integral improper -1

(1 point) Make the substitution $u = \sqrt{\frac{x}{8}}$ and evaluate the resulting definite integral.

$$\int_0^{+\infty} \frac{e^{-\left(\sqrt{\frac{x}{8}}\right)}}{\sqrt{8x}}\,dx =$$ 1/2