1. Find the volume obtained when the region bounded by y = x2 and y = 2x is revolved about the x-axis. 64π/15
2. If one leg AB of a right triangle increases at the rate of 2 inches per second, while the other leg AC decreases at 3 inches per second, find how fast the hypotenuse is changing when AB = 6 feet and AC = 8 feet. 1/10 ft/sec

Determine if the following sequences converge or diverge. If it converges, give the number to which it converges.

1.  Converges; 2
2.  Converges 0
3.  Converges 1/2
4.  Converges 0
5. Find the sum:  $\frac{π^{3}}{3^{π}-π^{3}}$
6. Verify that the function f(x) = sin x satisfies the hypothesis of the Mean Value Theorem on the interval [2, 11]. Then approximate to 3 decimal places all values of c in (2, 11) that satisfy the Mean Value Theorem equation. {4.499, 8.068, 10.782}
7. Find the average value of the function $y=3x^{2}\sqrt{x^{3}+1}$ on the interval [0, 2] (26/3)
8. Find the position, velocity, speed, and acceleration at time t = 1.
	1. $v\left(t\right)=sin\frac{1}{2}πt$; s = 0 when t = 0 s = 2/π, v = |v| = 1, a = 0
	2. $a\left(t\right)=$−3t; s = 1 and v = 0 when t = 0 s = ½, v = -3/2, |v| = 3/2, a = -3

Free Response (Calculator)

1. Given $y=ln⁡(x-1)$ on the closed interval [2, e +1]:
	1. Find the average value of y on the interval
	2. Find the value of k so that the line x = k divides the area under the curve into two regions of equal area.
	3. Write the integral for the volume of the solid generated when the area under the curve is rotated about the line y = 1

Free Response (No calculator)

1. Consider the function $y=\frac{e^{2-2x^{2}}}{x}$
	1. Find y’
	2. On what interval(s) is y decreasing?
	3. Find the coordinates of the point of inflection.
	4. On what interval(s) is y concave up?

Answers to Free Response

11.



