Name_____ Section_____

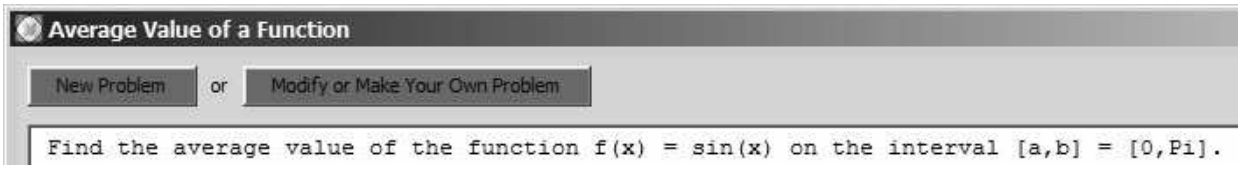
MATH 152 FINAL EXAM Version A Spring 2016

Sections 555-557 P. Yasskin

1-13	/52
14	/20
15	/20
16	/ 5
17	/ 5
18	/ 5
Total	/107

Multiple Choice: (13 problems, 4 points each)

1.



a. $\frac{2}{\pi}$

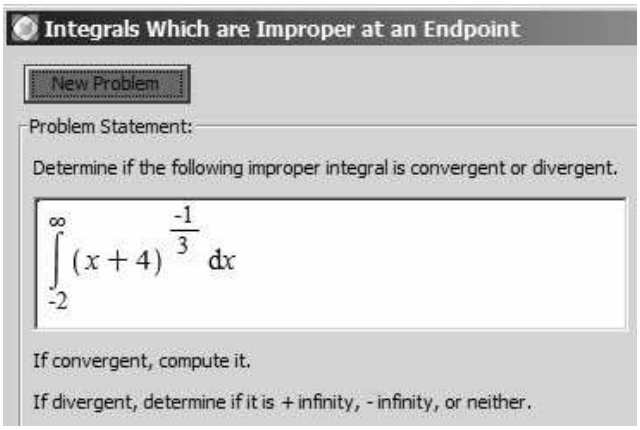
b. $\frac{1}{\pi}$

c. 2π

d. 2

e. 1

2.



a. converges to $\frac{3}{2^{1/3}}$

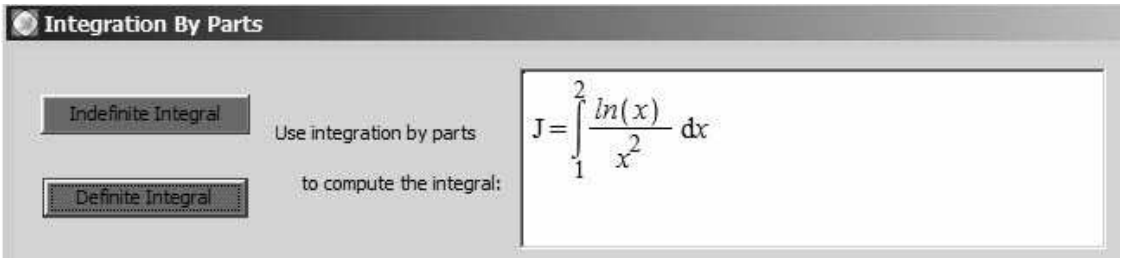
b. converges to $-\frac{3}{2^{1/3}}$

c. diverges to ∞

d. diverges to $-\infty$

e. diverges but not to $\pm\infty$

3.



a. $\frac{3 - \ln(2)}{2}$

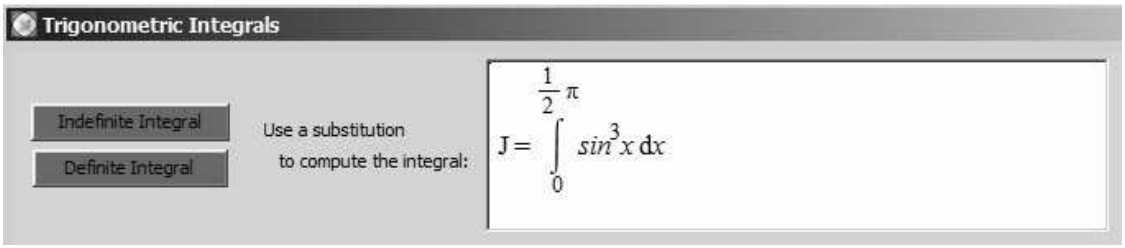
b. $\frac{\ln(2) - 3}{2}$

c. $\frac{\ln(2) - 1}{2}$

d. $\frac{-\ln(2)}{2}$

e. $\frac{1 - \ln(2)}{2}$

4.



a. $-\frac{1}{4}$

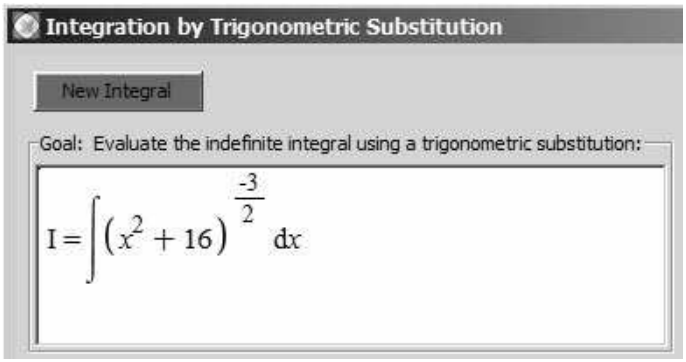
b. $\frac{1}{4}$

c. $\frac{2}{3}$

d. $-\frac{4}{3}$

e. $\frac{4}{3}$

5.



a. $\frac{1}{16}\int \csc^2\theta\, d\theta$

b. $\frac{1}{64}\int \sec^2\theta\, d\theta$

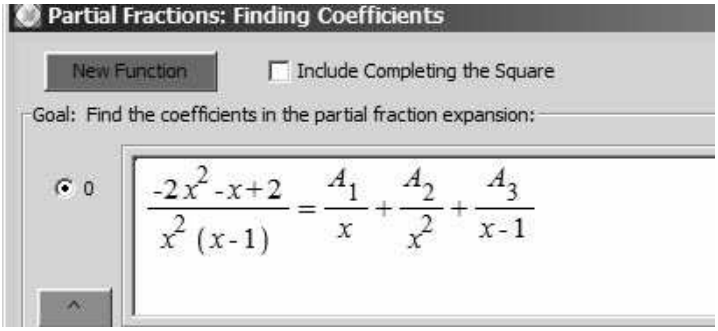
c. $\frac{1}{16}\int \sin^3\theta\, d\theta$

d. $\frac{1}{16}\int \cos\theta\, d\theta$

e. $\frac{1}{64}\int \cos^3\theta\, d\theta$

Simply identify the integral after the substitution.

6.



a. $A_1 = -1 \quad A_2 = -2$

b. $A_1 = 1 \quad A_2 = 2$

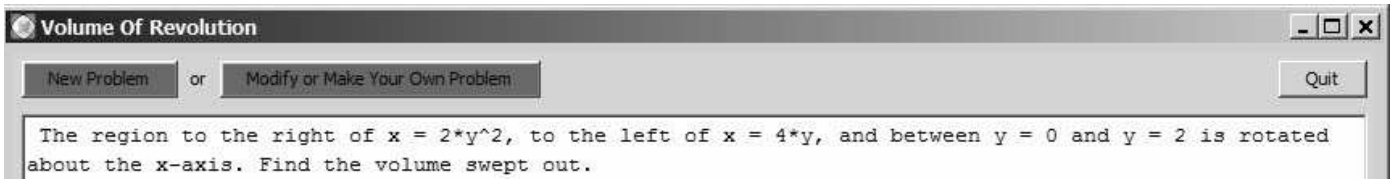
c. $A_1 = -2 \quad A_2 = -1$

d. $A_1 = 2 \quad A_2 = 1$

e. $A_1 = -2 \quad A_2 = 1$

Just find A_1 and A_2.

7.



a. $\frac{8}{3}\pi$

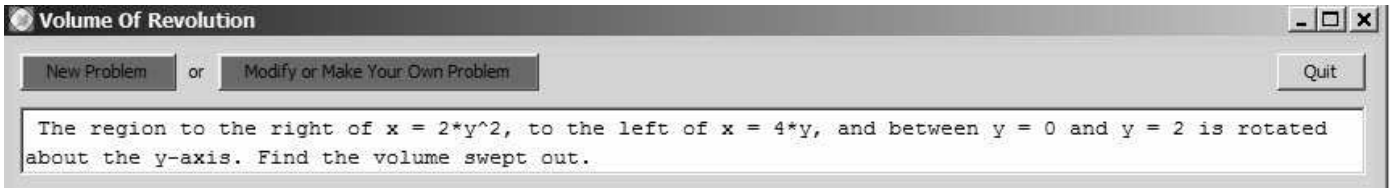
b. $\frac{16}{3}\pi$

c. $\frac{256}{3}\pi$

d. $\frac{16}{15}\pi$

e. $\frac{256}{15}\pi$

8.



a. $\frac{8}{3}\pi$

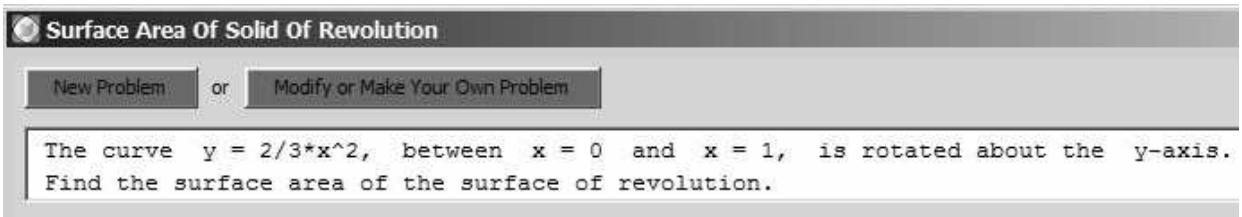
b. $\frac{16}{3}\pi$

c. $\frac{256}{3}\pi$

d. $\frac{16}{15}\pi$

e. $\frac{256}{15}\pi$

9.



a. $\frac{49}{36}$

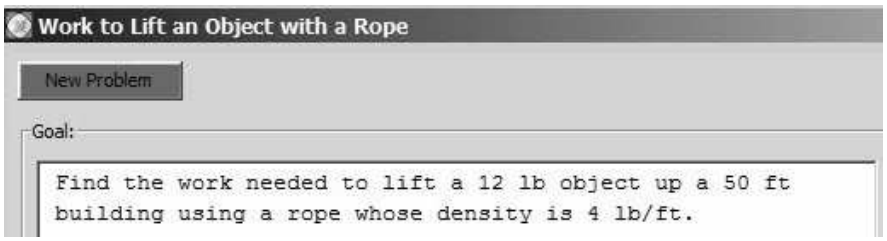
b. $\frac{49}{72}$

c. $\frac{49}{144}$

d. $\frac{49}{36}\pi$

e. $\frac{126}{72}\pi$

10.



a. 5600 ft-lb

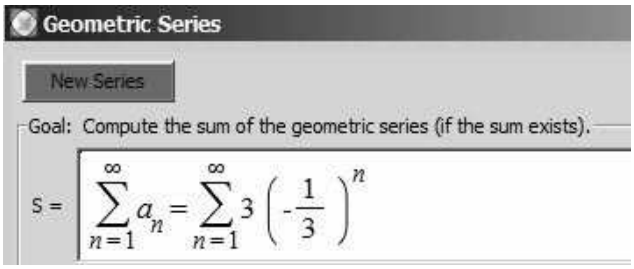
b. 5000 ft-lb

c. 3100 ft-lb

d. 2500 ft-lb

e. 600 ft-lb

11.



a. $-\frac{3}{2}$

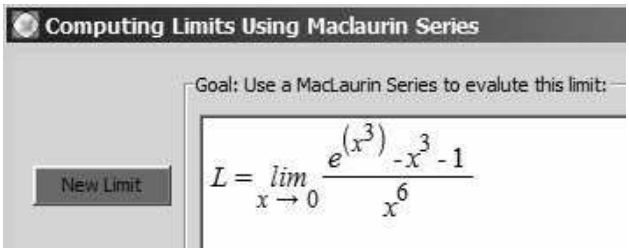
b. $-\frac{3}{4}$

c. $\frac{9}{4}$

d. $\frac{9}{2}$

e. diverges

12.



a. $\frac{1}{2}$

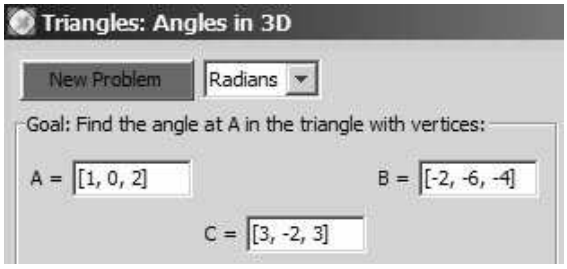
b. $\frac{1}{3}$

c. $\frac{1}{6}$

d. $\frac{1}{6!}$

e. diverges

13.



a. 0

b. $\frac{\pi}{2}$

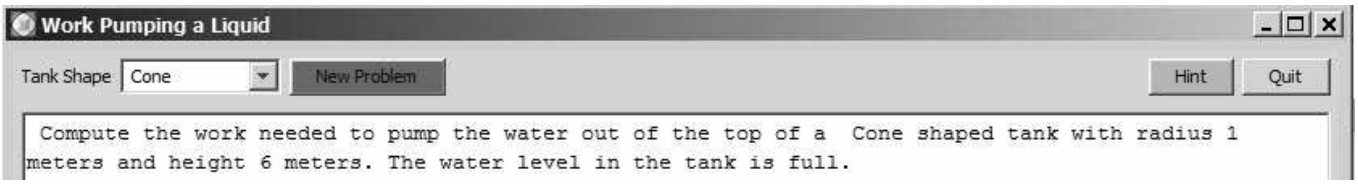
c. $\arccos\left(\frac{2}{3}\right)$

d. $\arccos\left(\frac{2}{9}\right)$

e. $\arccos\left(\frac{4}{9}\right)$

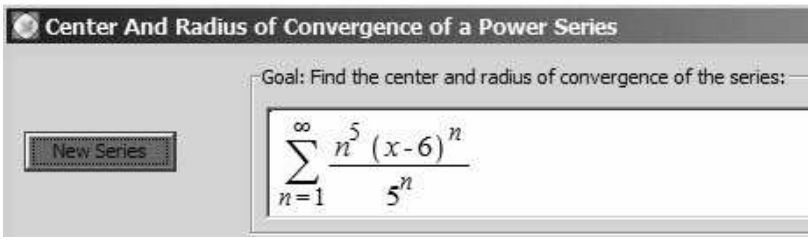
Work Out (5 questions, Points indicated. Show all you work.)

14. (20 points)



Write your answer as a multiple of ρg where ρ is the density of water and g is the acceleration of gravity. The vertex of the cone is at the bottom.

15. (20 points)



Also find the interval of convergence by checking the endpoints.

a. (2 pts) Identify the center: $a =$ _____

b. (8 pts) Find the radius of convergence:

$R =$ _____

c. (8 pts) Check the endpoints:

d. (2 pts) Summarize the interval of convergence: $I =$ _____

16. (5 points) Determine whether the series $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^{1/3}}$ is absolutely convergent, convergent but not absolutely or divergent. Explain all tests you use.

17. (5 points) The series $S = \sum_{n=1}^{\infty} \frac{1}{n^2+1}$ converges by the Integral Test.

If it is approximated by its 100^{th} partial sum S_{100}, compute the integral bound on the error in this approximation.

18. (5 points) Compute the sum of the series $\sum_{n=0}^{\infty} \frac{(-1)^n \pi^{2n+1}}{(2n+1)!3^{2n+1}}$.