

Quiz Date: September 22, 2017

**Instructions:** The following exercises are similar to those found in the course text book. This homework is not due for a grade, but you should know how to do all of them and be able to show your work for each. You can expect at least one of these problems to appear on an in-class quiz on the date listed above.

## 6.6 - Improper Integrals

Determine whether each integral is convergent or divergent. Evaluate those that are convergent.

1.  $\int_0^{\infty} \sqrt[4]{1+x} \, dx$

2.  $\int_{-\infty}^{\infty} \cos(\pi t) \, dt$

3.  $\int_1^{\infty} \frac{\ln x}{x} \, dx$

4.  $\int_1^{\infty} \frac{3}{x^5} \, dx$

5.  $\int_0^5 \frac{w}{w-2} \, dw$

## 7.1 - Area Between Curves

Find the area of the region bounded by the given curves set of curves.

6.  $y = 5x - x^2$ ,  $y = x$ .

7.  $y = \sqrt{x+2}$ ,  $y = \frac{1}{x+1}$ ,  $x = 0$ ,  $x = 2$ .

8.  $x = y^2 - 2$ ,  $x = e^y$ ,  $y = -1$ ,  $y = 1$

9.  $x = y^2 - 4y$ ,  $x = 2y - y^2$

10.  $y = \cos x$ ,  $y = \sin(2x)$ ,  $x = 0$ ,  $x = \frac{\pi}{2}$ . Note that this region consists of two parts.