# Math 112
# Homework 8 Solutions

## Part 1

**11.1 #2:** converges to 0

**11.1 #4:** converges to 0

**11.1 #6:** diverges

**11.1 #8:** converges to 1

**11.1 #10:** diverges

**11.1 #12:** converges to $\sqrt{2}$

**11.1 #14:** converges to 0

**11.1 #16:** converges to $\ln 1 = 0$

**11.1 #18:** (a). $\lim\limits_{n \to \infty} x^n$ diverges when $x > 1$ or $x \leq -1$. (b). $\lim\limits_{n \to \infty} x^n = 0$ when $|x| < 1$. (c). $\lim\limits_{n \to \infty} x^n = 1$ when $x = 1$.

**11.1 #33:** $\lim\limits_{k \to \infty} a_k$ exists only when $x \leq 0$ because $e^x > 1$ when $x > 0$. When $x < 0$, $\lim\limits_{k \to \infty} a_k = 0$. When $x = 0$, $\lim\limits_{k \to \infty} a_k = 1$..

**11.1 #39:** converges to $e^{-1/2}$

**11.1 #52:** diverges