

Name \_\_\_\_\_

Student Number \_\_\_\_\_

**Show all work. Label your answers clearly.**

1. Let  $f(x) = -3x^2 + 12x$ .

a) Give a domain on which  $f(x)$  is one-to-one.

b) For this choice of domain for  $f(x)$ , find  $f^{-1}(x)$ .

2. A kite is attached to 386 feet of string, which makes a 60 degree angle with the level ground. Keir is holding the string 4 feet above the ground. How high above the ground is the kite?

3. Erin and Rachel are on a carousel. Erin is on a green dragon which is 12 feet from the center of the carousel, and Rachel's blue horse is 18 feet from the center. Erin is moving at 9 ft/sec.

a) What is Rachel's linear speed?

b) The ride makes 30 complete revolutions before stopping. How long does it last?