

6. The gravitational force, F [Newtons], on a rocket is inversely proportional to the square of its distance, r [km], from the center of the earth.
- (a) Using k as the constant of proportionality, write a formula that represents this function
- (b) When the force on the rocket is 10^5 Newtons, the distance of the rocket from earth's center is 10^4 km. Use this to calculate the constant of proportionality – be sure to include the units of k .
7. In a California town, the monthly charge for waste collection is \$8 for 32 gallons of waste and \$12.32 for 68 gallons of waste.
- (a) Find a linear formula for the cost, C , of waste collection as a function of the number of gallons of waste, w .
- (b) What is the slope of the line found in part (a)? Give units and interpret your answer in terms of the cost of waste collection.
- (c) What is the vertical intercept of the line found in part (a)? Give units and interpret your answer in terms of the cost of waste collection.
8. Consider the graph of the ellipse $9x^2 + 25y^2 = 225$ at the right. Find the equation of the line joining $(a, 0)$ and $(0, b)$.
9. L is jointly proportional to r and the square of s and is inversely proportional to t .
- (a) Write the formula for L . Use k as the proportionality constant.
- (b) If r is doubled, s is quadrupled and t remains the same, by what factor will L increase?