

Math 22 Section 9

Quiz 4 Solutions

1. The pressure P of a sample of gas is directly proportional to the temperature T and inversely proportional to the volume V .

- (a) Write an equation to express this variation.

$$P = \frac{kT}{V}$$

- (b) Find the constant of proportionality if 100L of gas exerts a pressure of 40kPa at a temperature of 400K.

Solving the above for k , we get

$$k = \frac{PV}{T} = \frac{40 \times 100}{400} = \frac{40}{4} = 10kPa \times L/K$$

- (c) If the temperature is increased to 500K and the volume is decreased to 50L, what is the pressure of the gas?

$$P = \frac{kT}{V} = \frac{10 \times 500}{50} = \frac{500}{5} = 100kPa$$

2. Find the domain of the function $f(x) = \frac{1}{3x-6}$

Here, the only exclusions from the domain are points where the denominator is zero.

$$\text{i.e. } 3x - 6 = 0 \Leftrightarrow 3x = 6 \Leftrightarrow x = 2$$

So the domain is $\{x|x \neq 2\}$

3. Sketch the graph of $f(x) = |2x - 3|$ by first making a table of values

The actual graph looks like:

