Question 1 (5 Marks)

y is inversely proportional to d^2
When $d = 10$, $y = 4$

d is directly proportional to x^2
When $x = 2$, $d = 24$

Find a formula for y in terms of x.
Give your answer in its simplest form.

Question 2 (6 Marks)

The function f is given by

$$f(x) = 2x^3 - 4$$

(a) Show that $f^{-1}(50) = 3$

(2)

The functions g and h are given by

$$g(x) = x + 2 \text{ and } h(x) = x^2$$

(b) Find the values of x for which

$$hg(x) = 3x^2 + x - 1$$

.....

(4)

Question 3 (4 Marks)

Given that

$$x^2 : (3x + 5) = 1 : 2$$

find the possible values of x.

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(Total 15 Marks)