***Given a gradient graph, find the equation of the function.***

***1. The minimum value of y is 3 and the graph of the gradient dy is given***

 ***dx***

***below. Find the equation of the graph and draw it on the axes below.***

 ***dy***

 ***dx***



 ***y***



***Working***

***Min point is ( 2 , 3 )***

***Equ of the gradient is dy = 2x – 4***

 ***dx***

***Antidiff to find equ for y:***

***y = x2 – 4x + c***

***subs x = 2, y = 3***

 ***3 = 4 – 8 + c***

 ***7 = c***

***Equ is y = x2 – 4x + 7***

 ***Or y = (x – 2)2 + 3***

***2. The minimum value of f(x) is 1.***

 ***The gradient function f ꞌ(x) is drawn below.***

***Find the equation of y = f(x) and draw the graph showing the y intercept.***

 ***f ꞌ(x)***



 ***f(x)***



***Working***

***Min point is ( 4 , 1 )***

***Equ of the gradient is f ꞌ(x) = x – 2***

 ***2***

***Antidiff to find equ for f(x)***

***f(x) = x2 – 2x + c***

 ***4***

***Sub (4, 1) 1 = 4 – 8 + c c = 5***

***Equ is y = f(x) = x2 – 2x + 5***

 ***4***

***3. The maximum value of g(x) = 5.***

***The gradient function gꞌ(x) is drawn below.***

***Find the equation of y = g(x) and draw the graph showing the y intercept.***

 ***gꞌ(x)***



 ***g(x)***



***Working***

***MAX point is ( 2 , 5 )***

***Equ of the gradient is gꞌ(x) = -x + 2***

***Antidiff to find equ for g(x)***

***g(x) = -x2 + 2x + c***

 ***2***

***Subs (2, 5) 5 = -2 + 4 + c c = 3***

***Equ is g(x) = -x2 + 2x + 3***

 ***2***

***4. The minimum value of p(x) = 1.***

***The gradient function pꞌ(x) is drawn below.***

***Find the equation of y = p(x) and draw the graph showing the y intercept.***

 ***p ꞌ(x)***



 ***p(x)***



***Working***

***Min point is ( -3 , 1 )***

***Equ of the gradient is pꞌ(x) = 2x + 2***

 ***3***

***Antidiff to find equ for p(x)***

***p(x) = x2 + 2x + c subs (-3, 1)***

 ***3***

 ***1 = 3 – 6 + c c = 4***

***Equ is y = p(x) = x2 + 2x + 4***

 ***3***