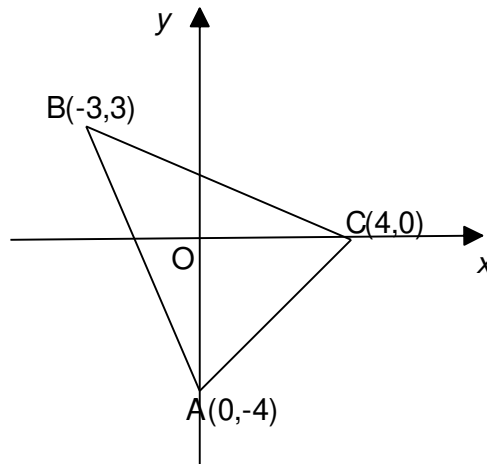


New Higher Homework 5

(50 min)

Marks

1



Given that $A(0,-4)$, $B(-3,3)$ and $C(4,0)$

- (a) Find the equation of the median from B 3
- (b) Find the equation of the altitude from B 3
- (c) What type of triangle is ABC? 1

2 Given that $(x + 3)$ is a factor of 6

~~_____~~
~~_____~~
 Find the value of a and hence fully factorise $f(x)$

3 Differentiate with respect to x 4

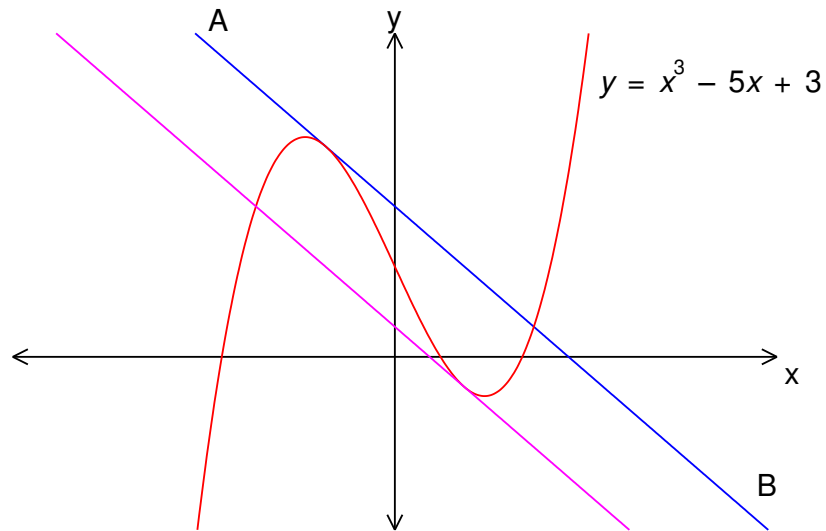
$$\frac{\sqrt{x-5}}{3x^3} \quad x \neq 0$$

4 Two functions f and g are defined as follows
 $f(x) = x^2 - 2$ and $g(x) = 2x + p$ where p is a constant

- (a) Show that ~~_____~~ 3
- (b) Find the value(s) of p such that ~~_____~~ has exactly one solution 4

5 Express $6 + x - x^2$ in the form $p - (x + q)^2$ 2

6

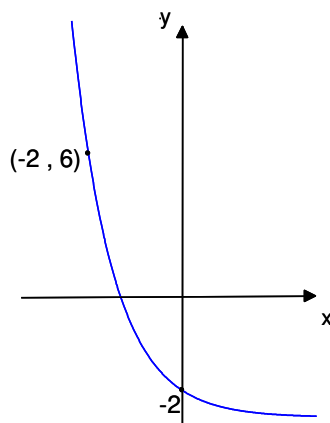


AB is a tangent to the curve $y = x^3 - 5x + 3$ and has equation $y = -2x + 5$ and has point of contact at $(-1, 7)$

Another tangent to this curve is parallel to AB

- (a) Find the point of contact of this tangent 7
- (b) Write down the equation of this tangent 1

7 The graph of $y = a^x + b$ where $a > 0$ is shown below



Find the values of a and b 5

8 Find the limit of the recurrence relation $U_{n+1} = 0.25U_n + 6$ 2