BECA / Huson / Unit 11: Calculus Name:
1 May 2023

11.11 Quiz: Tangent and normal lines to a function

Use your own notebook, but no calculators or computers

Find the derivative of each polynomial function

1. $f(x) = x^3 + 3x^2$

2. $g(x) = -x^4 + 3x^3 + 4x - 3$

Evaluate the function and its derivative for a given value of x

3. Given $f(x) = x^3 - 4x^2 + x + 5$
   (a) Find $f(1)$

   (b) Find $f'(1)$

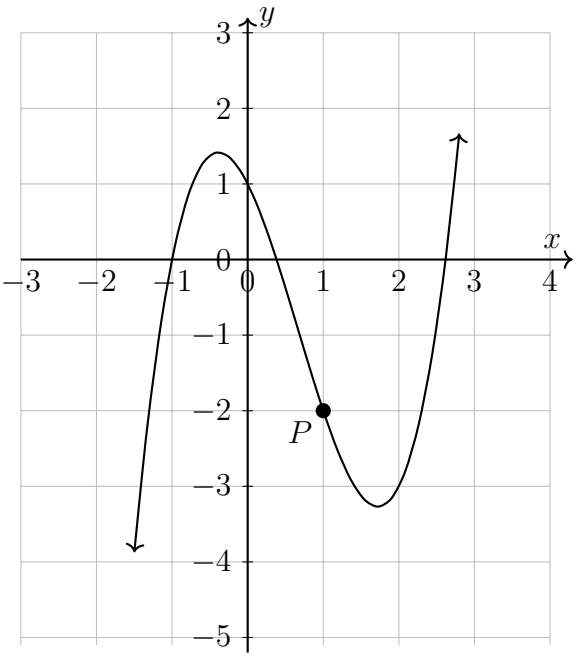
4. The graph shows the polynomial function $y = x^3 - 2x^2 - 2x + 1$. Its derivative is $\dfrac{dy}{dx} = 3x^2 - 4x - 2$.

   (a) Write down the coordinates of the point P.

   (b) Find the slope of the tangent line at P.

   (c) Write down the equation of the tangent line at P.

   (d) Draw the tangent line on the graph accurately with a straight edge.



5. The function $y = -x^2 - 3x + 2$ is graphed on the grid below. Find its derivative and the equations of the tangent and normal lines through point $(-3, 2)$. Draw the lines.