

IB Math Studies 2 - BELL WORK

Find $f'(x)$ given that $f(x)$ is:

j $\frac{2x - 3}{x^2}$

$$\frac{2x}{x^2} - \frac{3}{x^2}$$

$$2x^{-1} - 3x^{-2}$$

$$f'(x) = -2x^{-2} + 6x^{-3}$$

$$f'(x) = \frac{-2}{x^2} + \frac{6}{x^3}$$

k $\frac{x^3 + 5}{x}$

$$\frac{x^3}{x} + \frac{5}{x}$$

$$x^2 + 5x^{-1}$$

$$2x - 5x^{-2}$$

$$f'(x) = 2x - \frac{5}{x^2}$$

Questions on the assignment?

Exercise 20D

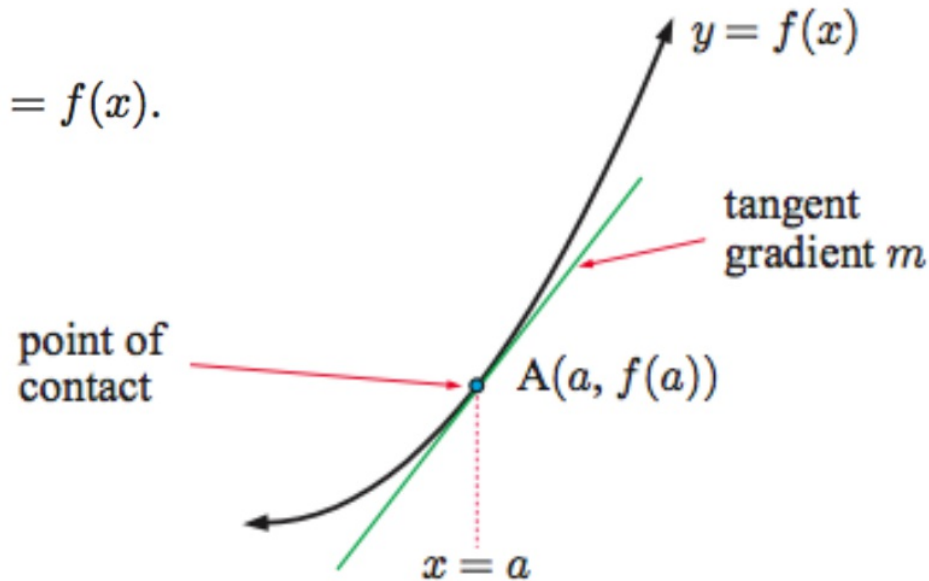
3, 5, 6, 8, 9, 11a-c, 13, 14

E

EQUATIONS OF TANGENTS

Consider a curve $y = f(x)$.

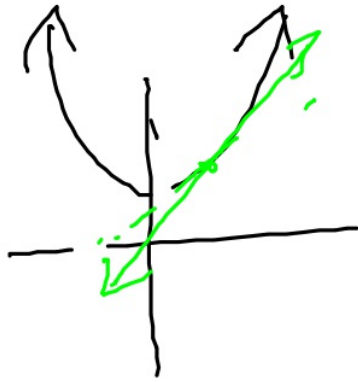
$$\frac{y - y_1}{x - x_1} = m$$



The equation of the tangent at the point $A(a, b)$ is $y - b = f'(a)(x - a)$.

(find the slope of the line at that point and plug it into the point-slope formula)

Find the equation of the tangent to $f(x) = x^2 + 1$ at the point where $x = 1$.



find m : $f'(x) = 2x$ $2(1) = 2$

$$m = 2$$

$$(1, 2)$$

$$y - 2 = 2(x - 1)$$

$$y - 2 = 2x - 2$$

$$y = 2x$$

Find the equation of the tangent to:

a $y = x^2$ at $x = 4$

$$m = 8$$

$$(4, 16)$$

$$y - 16 = 8(x - 4)$$

$$y - 16 = 8x - 32$$

$$y = 8x - 16$$

For each of the following curves:

- i find the equation of the tangent at the given point
- ii find the point at which this tangent meets the curve again.

$$f(x) = 3x^3 + 2x^2 - x + 2 \quad \text{at } x = 0.5$$

$$\left(-1.67, -4\frac{2}{3}\right)$$

$$f(x) = 9x^2 + 4x - 1$$

$$9(0.5)^2 + 4(0.5) - 1$$

$$m = 3.25$$

$$y - 2.375 = 3.25(x - 0.5)$$

$$y = 3.25x + 0.75$$

$$x = 0.5$$

$$y = 2.375$$

Assignment

Exercise 20E

#1 c-f, #2 a-b, #4, #5