Qu①: Find the gradient function $f'(x)$ (ie..."differentiate" the following.)

(a) $f(x) = 2x^3 - 6x$ (b) $f(x) = x^{-4}$ (c) $f(x) = x^{\frac{1}{2}}$ (d) $f(x) = \frac{1}{x^2}$

(e) $f(x) = \frac{4}{x^3}$ (f) $f(x) = 4\sqrt{x}$ *(g) $f(x) = \frac{2}{\sqrt{x}}$ *(h) $f(x) = (2x-5)^2$

Qu②: For the equation $y = 8x - 2x^2$ find the gradient at the point where:—

(a) $x = 0$ (b) $x = 1$ (c) $x = 2$ (d) $x = -1$

Qu③:

Find the equation of the Tangents to $y = 8x - 2x^2$ at:—

(a) The point $(1, 6)$ (b) The point where $x = 3$

① a) $6x^2 - 6$ b) $-4x^{-5}$ c) $\frac{1}{2}x^{-\frac{1}{2}}$ d) $-2x^{-3}$ e) $-12x^{-4}$ f) $2x^{-\frac{1}{2}}$

$= -\frac{4}{x^5}$ $= \frac{1}{2\sqrt{x}}$ $= \frac{-2}{x^3}$ $= \frac{-12}{x^4}$ $= \frac{2}{\sqrt{x}}$

g) $-x^{-\frac{3}{2}}$ h) $4(2x-5)^1$ Qu② $f'(x) = 8 - 4x$ $f'(0) = 8$ $f'(1) = 4$

$= -\frac{1}{\sqrt{x^3}}$ $= 8x - 20$ $f'(2) = 0$ $f'(-1) = \cancel{16}\ 12$

Qu③ a) $y = 4x + 2$ b) $y = -4x + 18$ [ANSWERS]