Subject: No:

Date: 8½/10

Kumpulan discussion 1B

Question 1

(a) $y = -10x^3 - 5x^{-2} + 2$

$\frac{dy}{dx} = -10(3)x^{3-1} - 5(-2)x^{-2-1}$

$= -30x^2 + 10x^{-3}$

$= -30x^2 + 10\left(\frac{1}{x^3}\right)$

$= -30x^2 + \frac{10}{x^3}$

(b) $y = \frac{1}{2}x^{-2} - \frac{2}{x}$

$\frac{dy}{dx} = \frac{1}{2}x^{-2} - 2x^{-1}$

$= -x^{-3} + 2x^{-2}$

Simplify.

(c) $y = -5x^{-\frac{1}{15}}$

$= -5\left(-\frac{1}{15}\right)x^{-\frac{1}{15}-1}$

$= \frac{1}{3}x^{-\frac{16}{15}}$

$= \frac{1}{3}\left(\frac{1}{x^{\frac{16}{15}}}\right)$

$= \frac{1}{3x^{\frac{16}{15}}}$

$\frac{1}{16/15}$.

3x

(d) $y = \sqrt[3]{x}$

$\frac{dy}{dx} = \frac{1}{3}x^{\frac{1}{3}-1}$

$= \frac{1}{3}x^{-\frac{2}{3}}$

$= \frac{1}{3}\left(\frac{1}{x^{\frac{2}{3}}}\right)$

$= \frac{1}{3x^{\frac{2}{3}}}$

4½

(e) $y = \frac{2}{\sqrt{x}}$

$= 2x^{-\frac{1}{2}}$

$\frac{dy}{dx} = 2\left(-\frac{1}{2}\right)x^{-\frac{1}{2}-1}$

$= -1x^{-\frac{3}{2}}$

$= -1\left(\frac{1}{x^{\frac{3}{2}}}\right)$

$= -\frac{1}{x^{\frac{3}{2}}}$

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(2) (a) $y = x^{\frac{1}{10}} - x^{-\frac{1}{5}}$

$\frac{dy}{dx} = \frac{1}{10} x^{\frac{-9}{10}} + \frac{1}{5} x^{-\frac{6}{5}}$

$= \frac{1}{10}\left(\frac{1}{x^{\frac{9}{10}}}\right) + \frac{1}{5}\left(\frac{1}{x^{\frac{6}{5}}}\right)$

$= \frac{1}{10^{9/10}} + \frac{1}{5 x \frac{6}{5}}$ ✓

(b) $y = x^{12} + x^7 + \frac{1}{2}x^4$

$y = x^{12} + x^7$

$\frac{dy}{dx} = 12x^{12-1} + 7x^{7-1} + \frac{1}{1\cancel{2}}(\overset{2}{\cancel{4}})x^{4-1}$

write properly!

$= 12x^{11} + 7x^6 + 2x^3$ ✓ ✓ ✓

4

(c) $y = x^3 - \frac{1}{6}x^6 + \frac{6}{4}x^8$

$\frac{dy}{dx} = 3x^{3-1} - \frac{1}{6}x^{6-1} + \frac{6}{1\cancel{4}}(\overset{2}{\cancel{8}})x^{8-1}$

$= 3x^2 - x^5 + 12x^7$ ✓ ✓ ✓

(d) $y = 3x - \sqrt{x} + 2$

$= 3 - \frac{1}{\sqrt{x}} - 1$

$\frac{dy}{dx} = 3 - x^{-1}$

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

$= 3 + x^{-2}$

$= 3 + \frac{1}{x^2}$ # ✓

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QUESTION 3 (CLO3, C3)

$$y = \frac{6x^3 + 4x^2 - 2x - 2}{2x^2}$$

$$\frac{{}^{3}\cancel{6}x^{\cancel{3}}}{{}_{1}\cancel{2}x^{\cancel{2}}} + \frac{{}^{2}\cancel{4}x^{\cancel{2}}}{{}_{1}\cancel{2}x^{2}} - \frac{{}^{1}\cancel{2}x}{\cancel{2}x^{2}} - \frac{{}^{1}\cancel{2}}{\cancel{2}x^{2}}$$

$3x + 2 - x^{1} - x^{2}$ ✓ $= 2x + 2 - x^{2}$

$\frac{dy}{dx} = 3 - 1(1)x^{1-1} - 1(2)x^{2-1}$

$= 3 - x - 2x$ * ✗

$\frac{dy}{dx} = 2 - 2x.$

or

$$y = \frac{6x^3 + 4x^2 - 2x - 2}{2x^2}$$

$$y = \frac{{}^{3}\cancel{6}x^{\cancel{3}}}{{}_{1}\cancel{2}x^{\cancel{2}}} + \frac{{}^{2}\cancel{4}x^{\cancel{2}}}{{}_{1}\cancel{2}x^{\cancel{2}}} - \frac{{}^{1}\cancel{2}x}{{}_{1}\cancel{2}x^{2}} - \frac{{}^{1}\cancel{2}}{{}_{1}\cancel{2}x^{2}}$$

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

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

$\frac{dy}{dx} = 3 - 1(-1)x^{-1-1} - 1(2)x^{2-1}$

$= 3 + x^{-2} - 2x$

$= 3 + \frac{1}{x^2} - 2x$ *

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Group Dicussion 1B

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