BOARD OF STUDIES
NEW SOUTH WALES

Question 1

a.) $\dfrac{33.64 - 29.791}{53.94} = 0.071357063$

$= 0.071$ (3 sig. fig.)

b.) $y = x^3 + 2$

$y' = 3x^2$

c.) $x^2 = 5x$

$\log_e x^2 = \log_e 5x$

$2\log_e x = \log_e 5x$

$x^2 - 5x = 0$

$x(x-5) = 0$

$x = 0$ or $x = 5$

d.) $\int \frac{3}{x}\, dx = 3\log_e x + C$

e.) $3x - \dfrac{2x-5}{2} = 6$

$\times 2 \quad 6x - 2x - 5 = 12$

$6x - 2x = 17$

$4x = 17$

$x = \frac{17}{4}$

$= 4\frac{1}{4}$

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P.) $x - 2y = 8 \quad \ldots\ldots (1)$

$2x + y = 1 \quad \ldots\ldots (2)$

from (1) $x = 8 + 2y$

sub into (2)

$2(8 + 2y) + y = 1$

$16 + 4y + y = 1$

$4y + y = -15$

$5y = -15$

$y = -3$

sub into (1)

$x - (2x - 3) = 8$

$x + 6 = 8$

$x = 2$

so $x = 2$ and $y = -3$