Q2

a) $y' = 2x + 3$

at $x = 1$

$2(1) + 3$

$= 5$

$m = 5 \quad (1, 4)$

$y - 4 = 5(x - 1)$

$y - 4 = 5x - 5$

$y = 5x - 1$

b) i) $m_{AB} = \frac{5-3}{-2-4} = \frac{2}{-6} = -\frac{1}{3}$.

$(4, 3) \quad -\frac{1}{3}$

$y - 3 = -\frac{1}{3}(x - 4)$

$y - 3 = -\frac{x}{3} + \frac{4}{3}$.

$y = -\frac{x}{3} + 4\frac{1}{3}$. $\quad 4\frac{1}{3} = \frac{13}{3}$

$3y = -x + 13$

$x + 3y - 13 = 0$.

ii) $A(-2, 5) \; B(4, 3)$.

$\sqrt{(5-3)^2 + (-2-4)^2}$

cont.....

ii) $\sqrt{4 + 36}$

$= \sqrt{40}$

$\sqrt{2 \times 2 \times 10}$

$= 2\sqrt{10}$

$\therefore AB = 2\sqrt{10}$.

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iii) (0,0) $x+3y-13$

$$\frac{ax_1+by_1+c}{\sqrt{a^2+b^2}}$$

$$\frac{1\cdot 0+3\cdot 0-13}{\sqrt{(1)^2+(3)^2}}$$

$$=\frac{0+0-13}{\sqrt{10}}$$

$$=\frac{-13}{\sqrt{10}}.$$

$=-4.110960958$.

iv) $\frac{-13}{\sqrt{10}} \times 2\sqrt{10}$.

$=-26$ units^2.

v) (2,5) B(4,3)

$C = 4+2 \quad 3+3$

(6,6) (4,3) (6,6).

$\frac{6-3}{6-4} = \frac{3}{2}$

$y-3=\frac{3}{2}(x-4)$

$y-3=\frac{3x}{2}-6$.

$y=\frac{3x}{2}-3$.

$2y=3x-6$. PTO

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$2y = 3x - 6$ $(0,0)$.

$2 \cdot 0 + 3 \cdot 0 - 6$

$\sqrt{(2)^2}$

$2y = 3x - 6$ $(0,0)$.

$3x - 2y - 6$.

$$\frac{3 \cdot 0 - 2 \cdot 0 - 6}{\sqrt{(3)^2 + (-2)^2}}$$

$$= \frac{-6}{\sqrt{13}}.$$