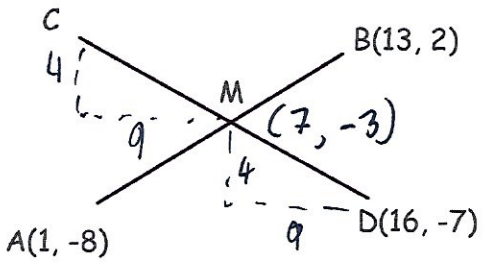
Name: _____ 5-a-day Further Maths

17th March



Lines AB and CD bisect each other at M.

Work out the coordinates of C.

(-2, 1)

Using completing the square, write down the coordinates of the minimum point on the curve

$y = x^2 - 8x - 11$

$y = (x-4)^2 - 16 - 11$

$y = (x-4)^2 - 27$

(4, -27)

Find the range of values of x that satisfies both

$x^2 > 3$ and $\frac{3x}{2} > -10$

$x < -\sqrt{3}$ or $x > \sqrt{3}$

$3x > -20$

$x > -\frac{20}{3}$

$-\frac{20}{3} < x < -\sqrt{3}$ or $x > \sqrt{3}$

A curve has equation

$y = \frac{5}{2}x^2 + 12x$

Work out the equation of the normal to the curve at the point $(-0.5, -5.375)$

Give your answer in the form
ax + by + c = 0, where a, b and c are integers.

$\frac{dy}{dx} = 5x + 12$

$x = -0.5 \quad \frac{dy}{dx} = 9.5 \left(\frac{19}{2}\right)$

$y = -\frac{2}{19}x + c$

$-5.375 = \frac{1}{19} + c \quad c = -\frac{825}{152}$

$y = -\frac{2}{19}x - \frac{825}{152}$

$\frac{2}{19}x + y + \frac{825}{152} = 0 \quad \times 152$

$16x + 152y + 825 = 0$