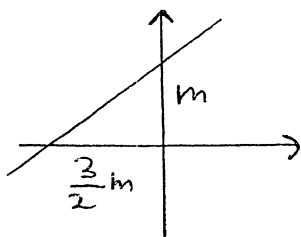ANSWERS

A) $4x + 5y = -7$

B) $2\sqrt{6}$

C) $x^2 + y^2 = 117$

A) Find the equation of the line of centers of the circles $x^2 + y^2 + 6x - 2y + 1 = 0$, and $2x^2 + 2y^2 - 8x + 12y - 24 = 0$. Write the equation in ax + by = c form.

$C_1 = (-3, 1)$; $C_2 = (2, -3)$. $m = \dfrac{-3-1}{2+3} = -\dfrac{4}{5}$

$4x + 5y = -12 + 5 = -7$

B) A triangle with area 18 is formed by the axes and a line with slope $\dfrac{2}{3}$ which has a positive y-intercept. Calculate in simple radical form, the value of this positive y-intercept.

$A = \dfrac{1}{2} \cdot \dfrac{3}{2} m \cdot m = 18$

$\dfrac{1}{4} m^2 = 6$, $m^2 = 24$

$m = 2\sqrt{6}$

C) Find the equation of the circle with center at the origin which is tangent to the line 2x + 3y = 39

$2x + 3y = 39$

$2x + 3y = 0$

$r = \dfrac{39 - 0}{\sqrt{2^2 + 3^2}} = \dfrac{39}{\sqrt{13}} = 3\sqrt{13}$. ANS $x^2 + y^2 = 117$