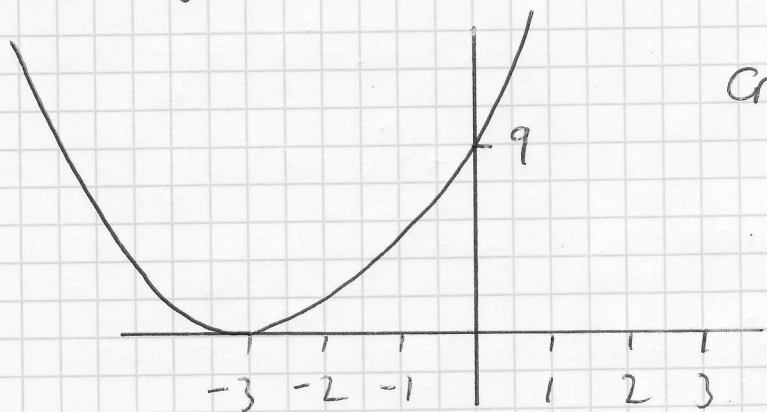


C1 MAY 2006

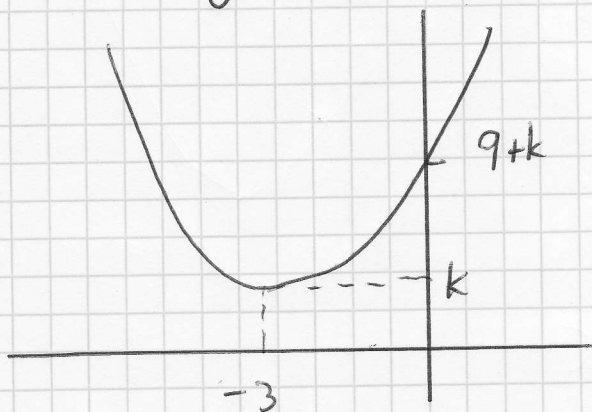
Q3(a)  $y = (x+3)^2$  translates  $y = x^2$  by  $\begin{pmatrix} -3 \\ 0 \end{pmatrix}$



Crosses y axis when  $x=0$

$$y = (0+3)^2 = 9$$

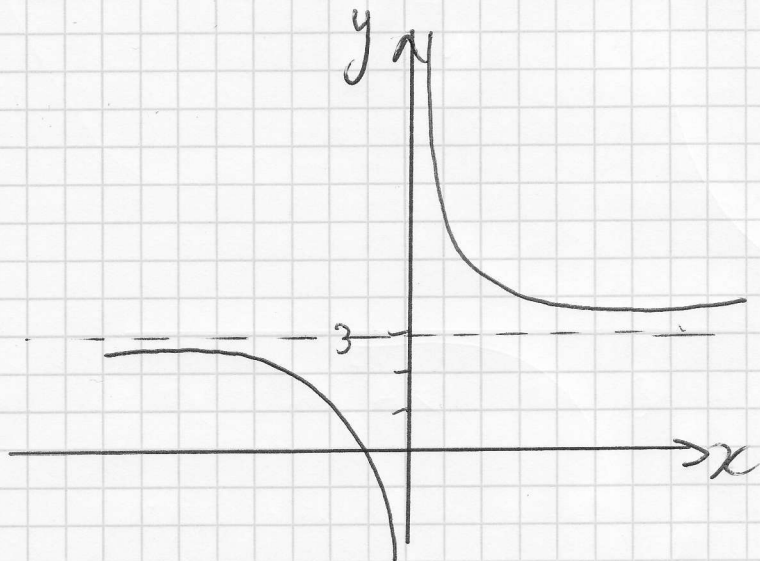
(b)  $y = (x+3)^2 + k$  translates  $y = x^2$  by  $\begin{pmatrix} -3 \\ +k \end{pmatrix}$   
crosses y axis when  $x=0$   $y = 9+k$



C1 - January 2007

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

(a)  $y = f(x) + 3$  translates  $y = f(x)$  by  $\begin{pmatrix} 0 \\ +3 \end{pmatrix}$



Asymptotes @  $x=3$  and  $y=0$ .

(b) Crosses x axis when  $y=0$

$$\frac{1}{x} + 3 = 0$$

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

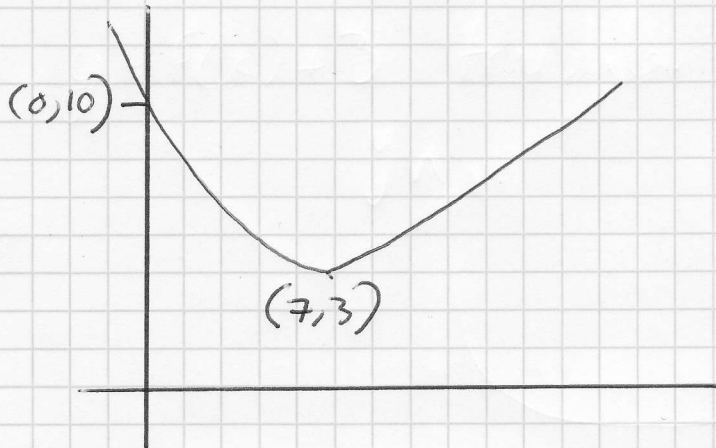
$$-3x = 1$$

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

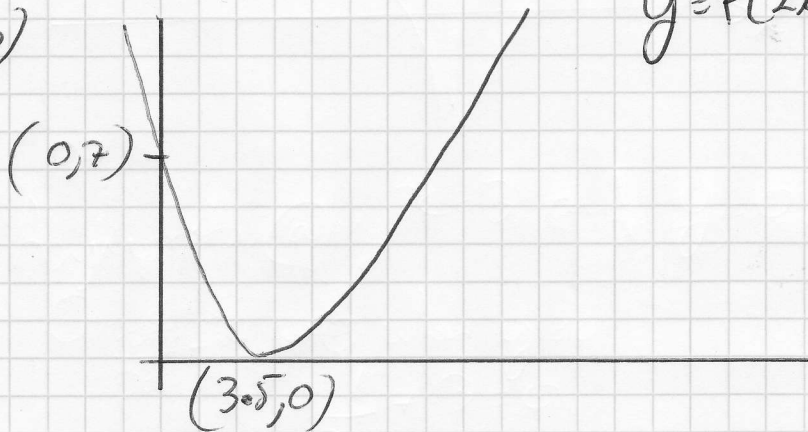
$\therefore$  Crosses axis @  $\left(-\frac{1}{3}, 0\right)$ .

C1 - May 2008

Q3  $\frac{1}{1}$ . (a)  $y = f(x) + 3$  translates  $y = f(x)$  by  $\begin{pmatrix} 0 \\ +3 \end{pmatrix}$

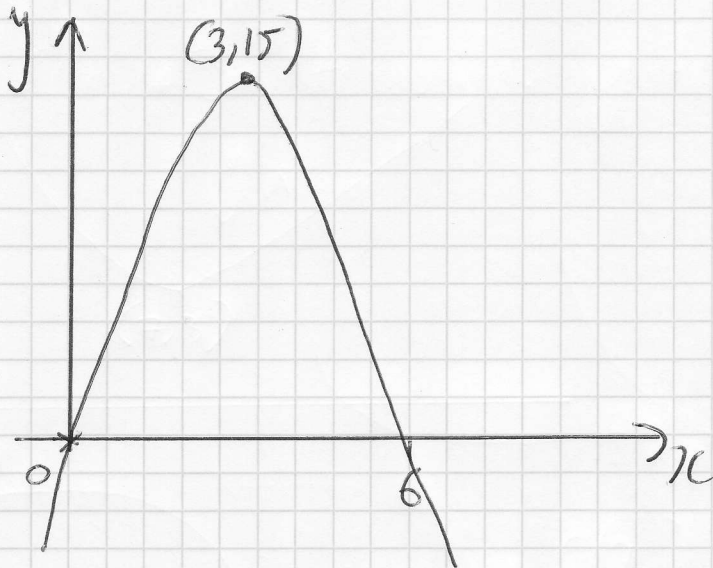


(b)  $y = f(2x)$  multiplies  $x$ -coords by  $\frac{1}{2}$ .

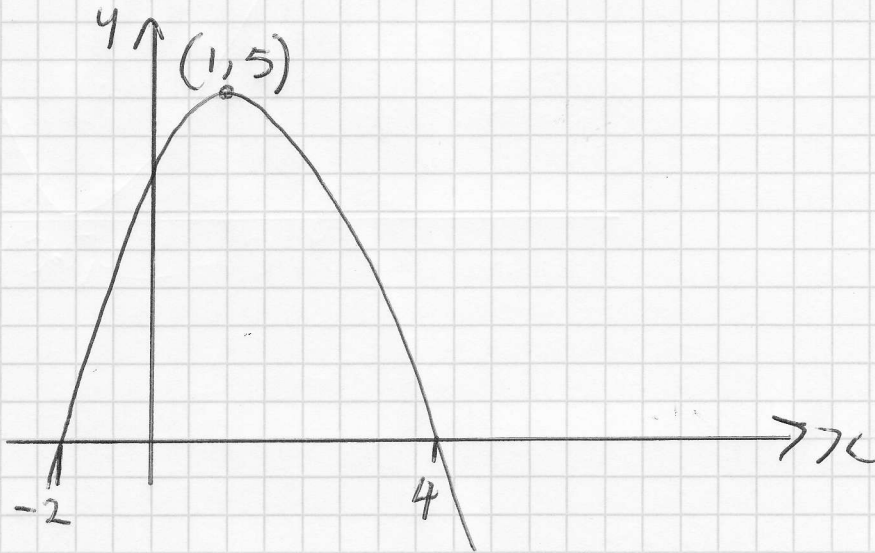


C1 - May 2005

Q4 (a)  $y = 3f(x)$  multiplies  $y$  coords by 3.

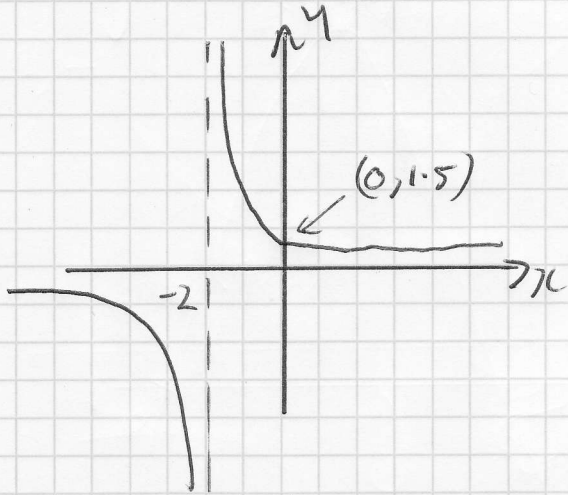


(b)  $y = f(x+2)$  translates  $f(x)$  by  $\begin{pmatrix} -2 \\ 0 \end{pmatrix}$



C1 - May 2007

Q5 (a)  $y = \frac{3}{x+2}$  translates  $y = \frac{3}{x}$  by  $\begin{pmatrix} -2 \\ 0 \end{pmatrix}$



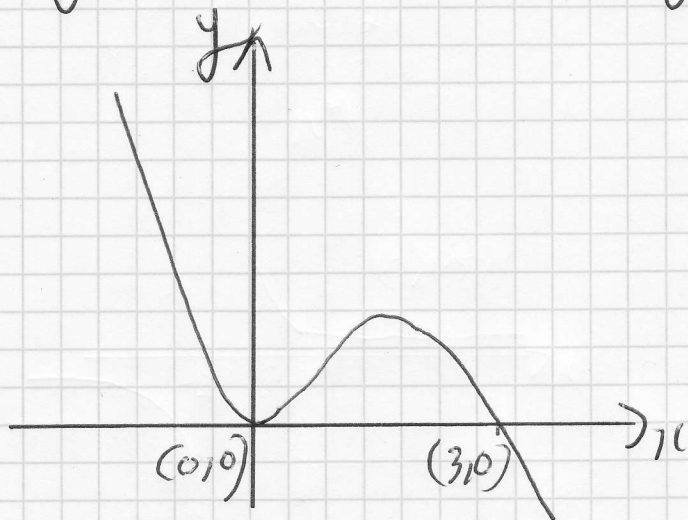
crosses y axis when  $x=0$

$$y = \frac{3}{0+2} = 1.5$$

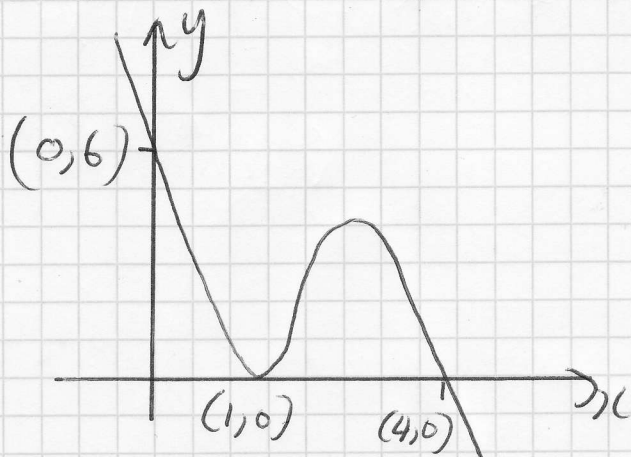
(b) Asymptotes @  $x = -2$  and  $y = 0$

C1 - January 2006

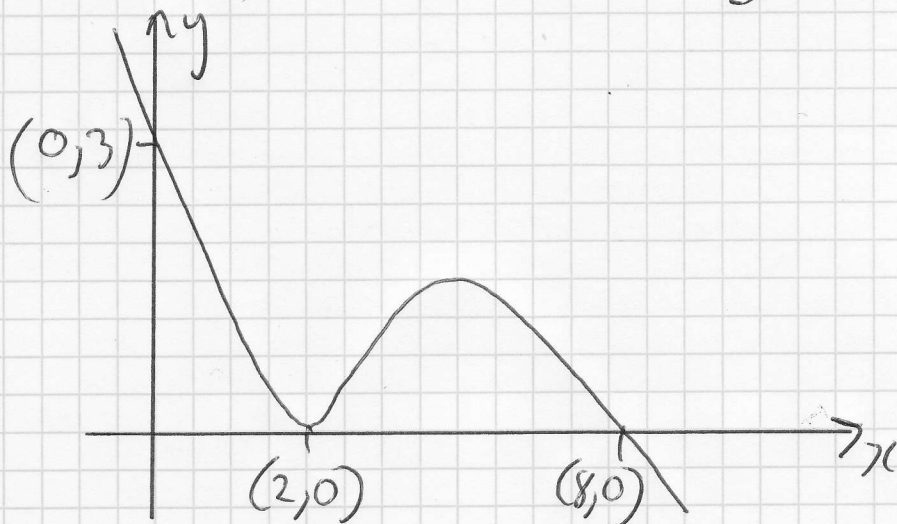
Q6a)  $y = f(x+1)$  translates  $y = f(x)$  by  $\begin{pmatrix} -1 \\ 0 \end{pmatrix}$



(b)  $y = 2f(x)$  multiplies y coords by 2.

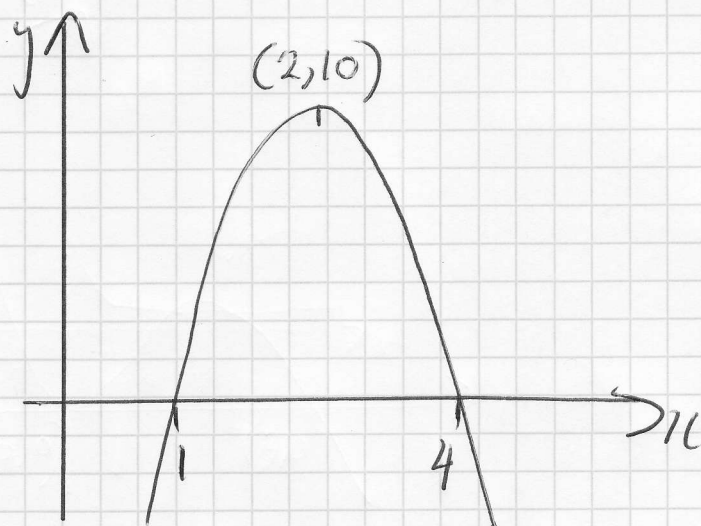


(c)  $y = f\left(\frac{1}{2}x\right)$  multiplies x coords by  $\frac{1}{\frac{1}{2}} = 2$



C1 - January 2008

Q6 (a)  $y = 2f(x)$  multiplies  $y$  coords by 2



(b)  $y = f(-x)$  reflects  $y = f(x)$  in  $y$ -axis

