underground mathematics

Group A

	y-axis is an asymptote	Different values of x can have the same value of y.	y intercept = +3	passes through origin
$x = 1$ is a root		$y = \lvert x - 1 \rvert$	$y = -3x + 3$	
has exactly two roots		$y = x(x-2)$		
function is not defined for all values of x	$y = \frac{1}{x}$ for $x \neq 0$	$y = \frac{1}{(x-1)^2}$ for $x \neq 1$	$y = \frac{3}{x+1}$ for $x \neq -1$	
$y \to \infty$ as $x \to \infty$	$y = x + \frac{1}{x}$	$y = (x-1)^2$	$y = 2 + (x-1)^4$	

Group B

	y-axis is an asymptote		y intercept is 3	passes through origin
$x = 1$ is a root	$y=\frac{1}{x}-\frac{1}{x}$	$y = \lvert x-1 \rvert$	$y = -3x+3$	$y=x(x-1)$
has exactly two roots	$y=x-\frac{1}{x}$	$y = x(x-2)$	$y=-x^2+3$	$y = x(x-1)$
Not defined for all x values	$y=\frac{1}{x}$ for $x \neq 0$	$y=\frac{1}{(x-1)^2}$ for $x \neq 1$	$y=\frac{3}{x+1}$ for $x \neq -1$	$y=\frac{1}{x-3}+\frac{1}{3}$ $x \neq 3$
$y \to \infty$ as $x \to \infty$	$y=x+\frac{1}{x}$	$y=\lvert x \rvert$	$y = 2+(x-1)^4$	$y=x(x-1)$

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Group C

	y-axis is an asymptote			passes through origin
$x = 1$ is a root	$y = \frac{1}{\lvert x \rvert} - 1$	~~$y = \lvert x - 1 \rvert$~~ $x(x-1)$	$y = -3x + 3$	$x(x-1)$
has exactly two roots	$y = \frac{1}{\lvert x \rvert} - 1$	$y = x(x-2)$ $(x-1)^2 + 2$	$(x^2-1)^2 + 2$	$x(x-1)$
$\exists x : f(x)$ undefined	$y = \frac{1}{x}$ for $x \neq 0$	$y = \frac{1}{(x-1)^2}$ for $x \neq 1$	$y = \frac{3}{x+1}$ for $x \neq -1$	
$y \to \infty$ as $x \to \infty$			$y = 3x - 3$ ~~$y = 2 + (x-1)^4$~~	$x(x-1)$

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Group D

	y-axis is an asymptote	Has no roots < 0		passes through origin
$x = 1$ is a root	$y = \frac{1}{x} - 1$	$y = \lvert x - 1 \rvert$	$y = -3x + 3$	$(x - \frac{1}{2})^2 + y^2 = \frac{1}{4}$
has exactly two roots	$y = \frac{1}{\lvert x \rvert} - 1$	$y = x(x-2)$		$y + 1 = (x+1)^2$
Has a vertical asymptote	$y = \frac{1}{x}$ for $x \neq 0$	$y = \frac{1}{(x-1)^2}$ for $x \neq 1$	$y = \frac{3}{x+1}$ for $x \neq -1$	$y = \frac{1}{x+1} - 1$
$y \to \infty$ as $x \to \infty$			$y = 2 + (x-1)^4$	$y = x$

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Group E

	y-axis is an asymptote	Positive roots $x=1$ to ∞. Symmetrical about $x=1$	~~Has real roots.~~ y intercept at (0,3)	passes through origin
$x=1$ is a root	$\ln(x)=y$	$y=\lvert x-1\rvert$	$y=-3x+3$	$x(x-1)^2=y$
has exactly two roots	$y=\frac{1}{\lvert x\rvert}-1$	$y=x(x-2)$	$y=x^2+2x+3$	$y=x(x+1)^2$
undefined for all values of x.	$y=\frac{1}{x}$ for $x\neq 0$	$y=\frac{1}{(x-1)^2}$ for $x\neq 1$	$y=\frac{3}{x+1}$ for $x\neq -1$	
$y\to\infty$ as $x\to\infty$			$y=2+(x-1)^4$	$y=e^x-1$