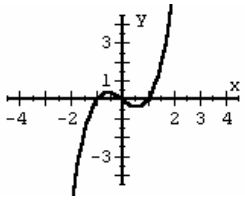
TESTING FOR SYMMETRY

Symmetry about the

y-axis	x-axis	origin
Replace x with $-x$ yields an equivalent eq.	Replace y with $-y$ yields an equivalent eq.	Replace x with $-x$ **and** Replace y with $-y$ yields an equivalent eq.

ex) Test $y = x^3 - x$ for symmetry:

About y-axis No
About x-axis No
About origin Yes



y-axis	**x-axis**	**origin**
$y = x^3 - x$	$y = x^3 - x$	$(-y) = (-x)^3 - (-x)$
$y = (-x)^3 - (-x)$	$(-y) = x^3 - x$	$-y = -x^3 + x$
$y = -x^3 + x$	$y = -x^3 + x$	$y = x^3 - x$
Is NOT the original equation	Is NOT the original equation	IS the original equation √

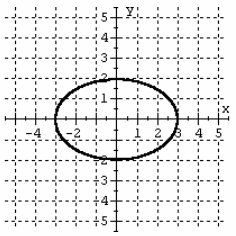
Test the following relations for symmetry.

1) $y = x^4 - 2x^2 + 1$

About y-axis _____
About x-axis _____
About origin _____

2) $4x^2 + 9y^2 = 36$

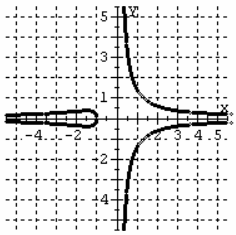
About y-axis _____
About x-axis _____
About origin _____



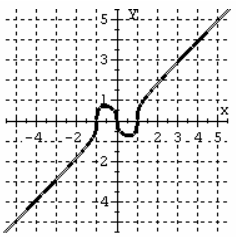
3) $x^3y^2 = x + 1$

i.e. $y = \pm\sqrt{\dfrac{x+1}{x^3}}$

About y-axis _____
About x-axis _____
About origin _____



4) $y^3 = x^3 - x$

i.e. $y = \sqrt[3]{x^3 - x}$

About y-axis _____
About x-axis _____
About origin _____