

FUNCTIONS

1. Let $f(x) = x^2 - 9$, $g(x) = 2x + 3$ and $h(x) = x - 3$. Find each of the following.

a) $(f + g)(x)$

b) $(f/h)(x)$

c) $g(f(x))$

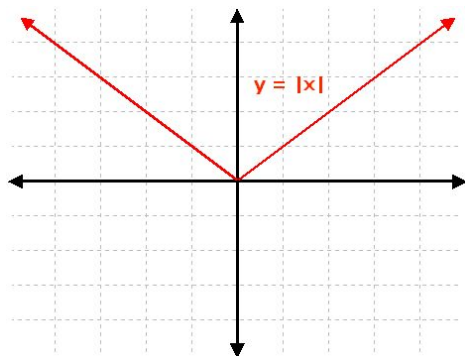
d) $f(g(h(x)))$

e) $(g - h)(8)$

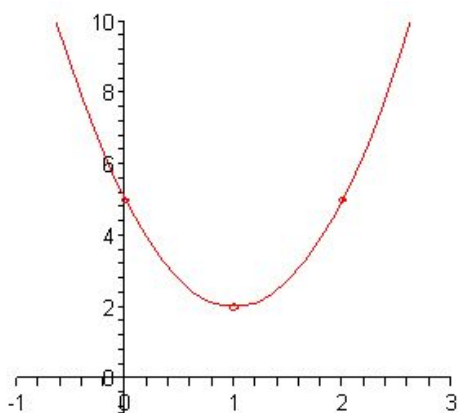
f) $h(f(-2))$

2. State the domain, range and zeros of each of the following.

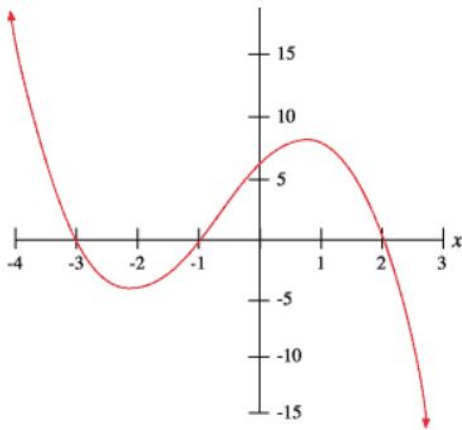
a)



b)



c)



3. Determine whether the graph of each of the following equations is symmetric with respect to the x-axis, y-axis, origin, the line $y = x$ or none of these.

a) $y = -8x$

b) $x^2 + y^2 = 4$

c) $y = -|x|$

4. Show, algebraically, that $f(x) = 4x - 9$ and $g(x) = (x + 9)/4$ are inverse functions.

5. Find a rule for the inverse of $f(x) = x^3 + 1$. Then graph both $f(x)$ and $f^{-1}(x)$ on the same coordinate plane.