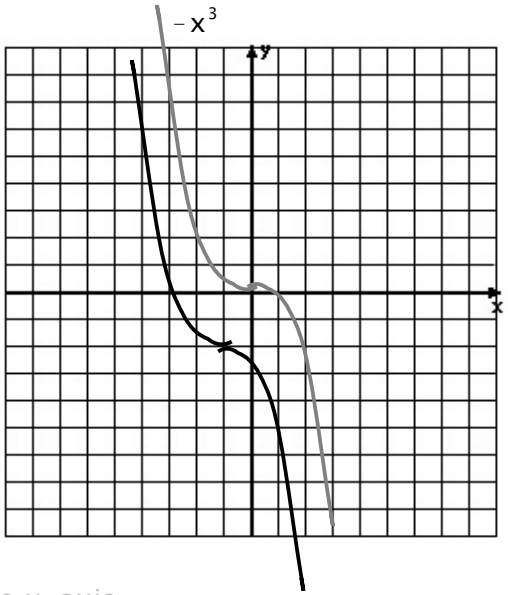
4 8. Given the function f has the graph shown at left, which of the following could be the function?



a. $f(x) = x^4 - 3$ not even close !

b. $f(x) = (x-1)^4 - 4$ ditto!

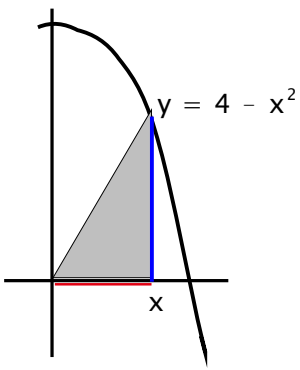
c. $f(x) = -x^3 - 3$

d. $f(x) = -(x+1)^3 - 2$

e. $f(x) = -(x-1)^3 - 3$

f. $f(x) = -(x+1)^2 - 2$ an even function !

6 9. A right triangle has a vertex at (0.0), one arm on the positive x-axis, and third vertex on the curve: $y = 4 - x^2$.
Write a function for the area A of this triangle in terms of x.
What is the domain of this function ?

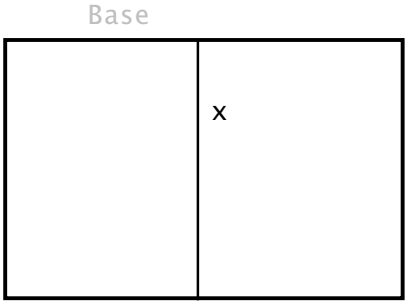


Area of triangle = (½) base • height

$= (½)(x - 0)(4 - x^2 - 0)$

$= (½)(x)(4 - x^2)$ For $0 \le x \le 2$

12 10. Two adjacent rectangular fields are to be enclosed with 200 yards of fencing— The two fields will be identical rectangles, sharing a side (fence) in the middle. Let x be the length of fence in the middle.



4 a. Express the total area enclosed by the fields in terms of x.

Area = base • height

$= (½)(200 - 3x) \cdot x$

2 b. What is the area when x = 10 ?

$(½)(200 - 30)\,10 = 850$ square yards.

4 c. For what value of x will the area be maximum ?

Area is maximum when x = 100/3 yds .

2 d. What is the maximum area ?

$(½)(200 - 3(100/3)) \cdot 100/3 = 5000/3$ yd^2