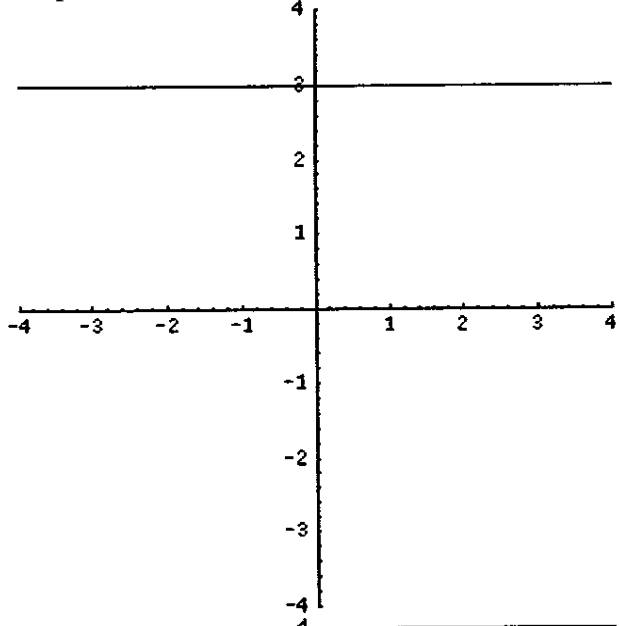
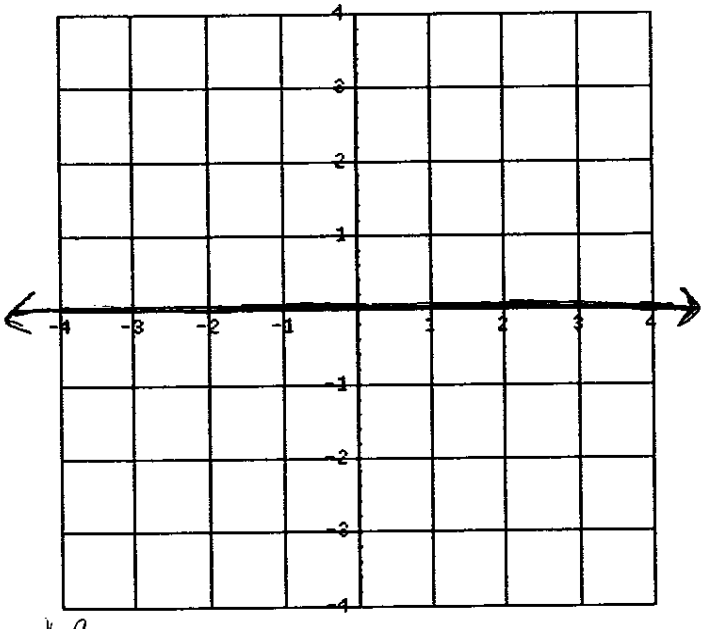
Solve:

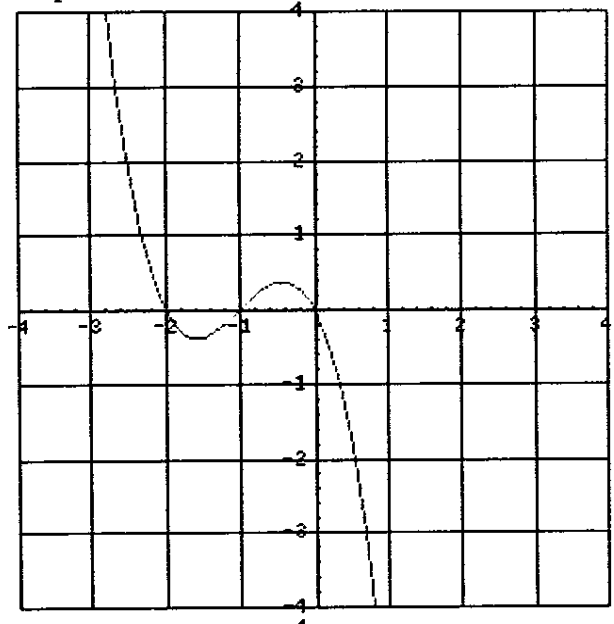
1) Graph the derivative of:

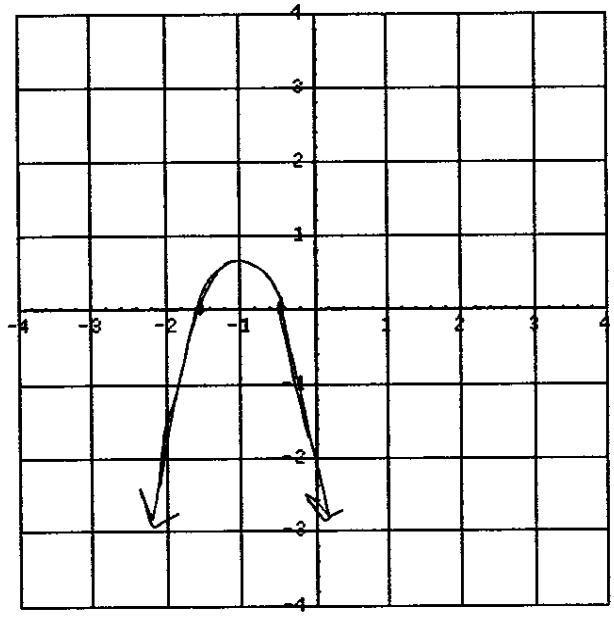




*Remember, derivative is slope, so the graph has a constant slope of 0.

2) Graph the derivative of:





3) Graph the derivative of:

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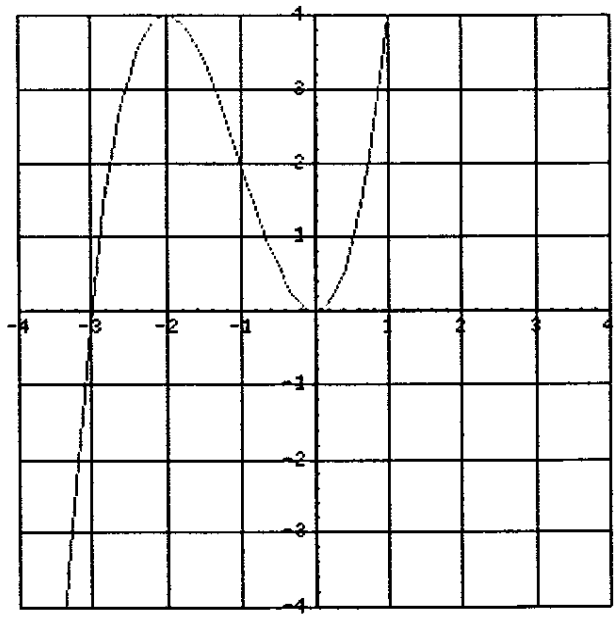
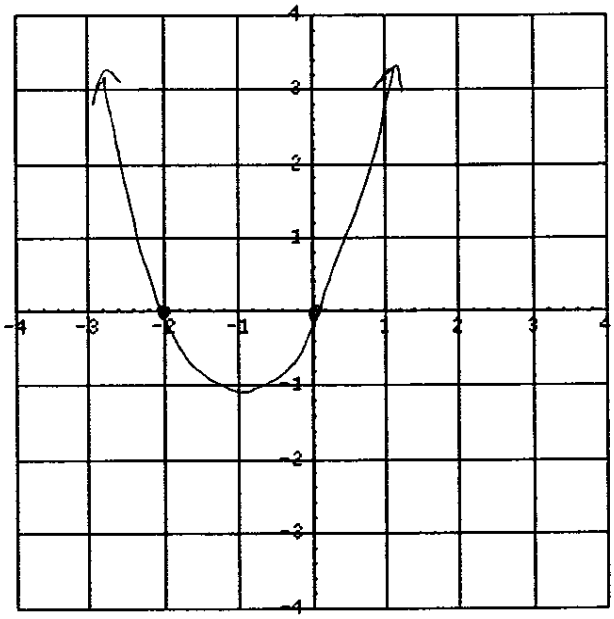
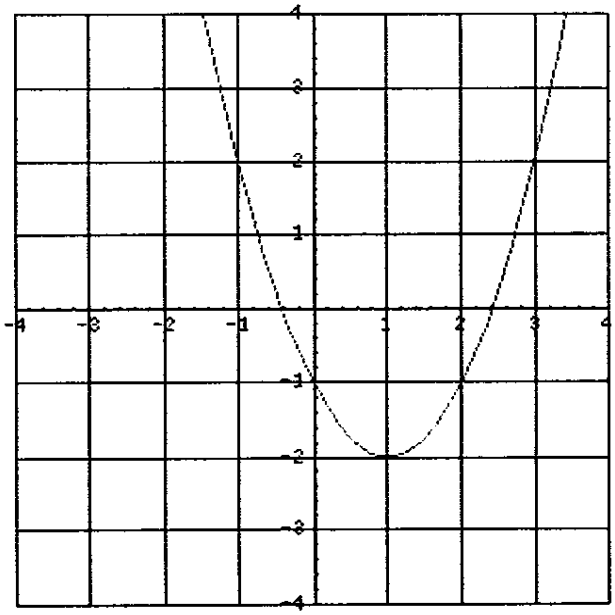
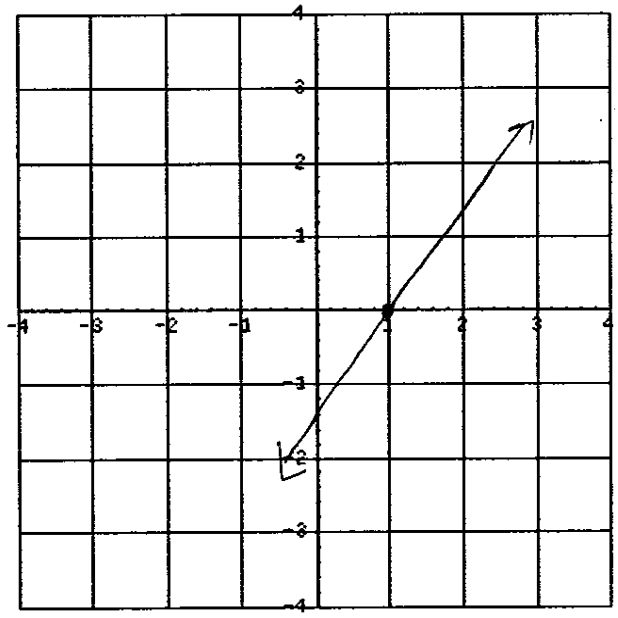
4) Graph the derivative of:

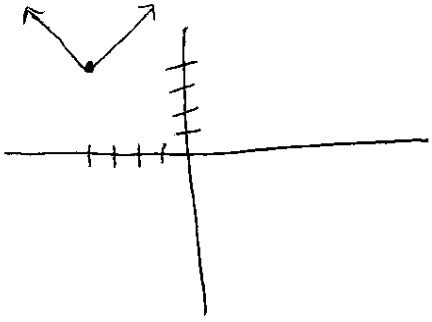








5) Is $u(x) = |x + 4| + 4$ differentiable at $x = -4$?



No, there's a corner

6) a(x) is pictured below. Is a(x) differentiable at $x = 2$?

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Is $a(x)$ differentiable at $x=2$?

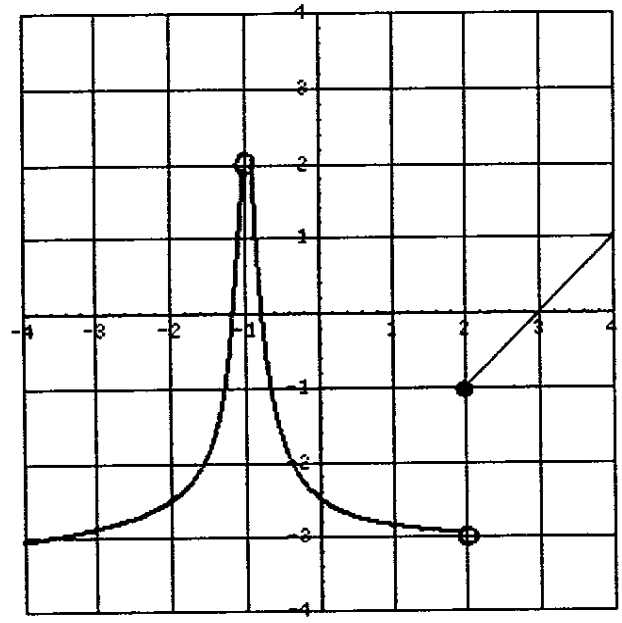
No, it's not continuous

What about $x=-1$?

No, it's not continuous

$x=0$?

Yes, it's differentiable at $x=0$.



7)

$$m(x) = \begin{cases} 2x-5 \; ; \; x \geq -3 \\ -1 \quad ; \; x < -3 \end{cases}$$

Is m(x) differentiable at x = -3?

$2(-3)-5 = -11$

No, it's not continuous

8)

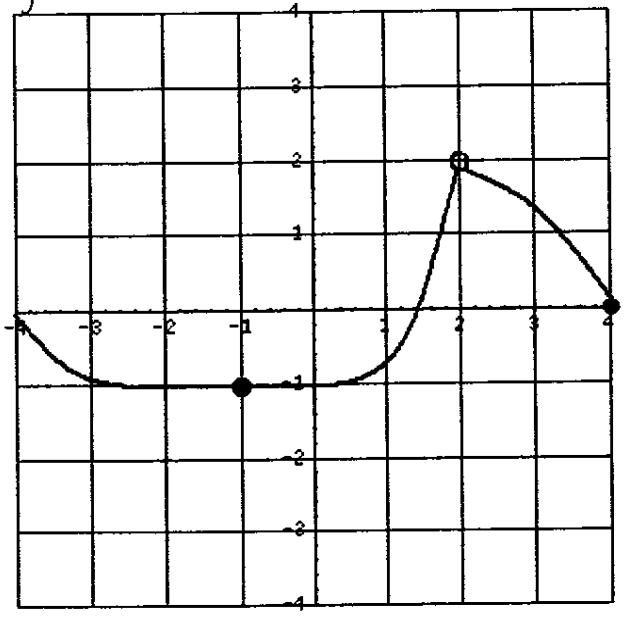
$$u(x) = \begin{cases} x+5 \; ; \; x \neq 6 \\ 3 \quad ; \; x = 6 \end{cases}$$

Is u(x) continuous, differentiable, both, or neither at x = 6?

neither

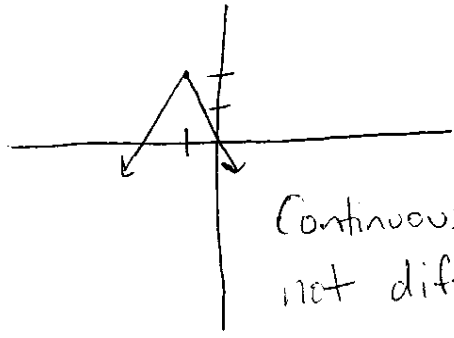
9) **a(x) is pictured below. Where is a(x) differentiable?**

Everywhere between $x=-4$ and $x=4$, except $x=2$.



Where does $a(x)$ have a horizontal tangent line? at $x=-1$

10) **Is a(x) = -2|x + 1| + 2 continuous, differentiable, both, or neither at x = -1?**



Continuous, but not differentiable.