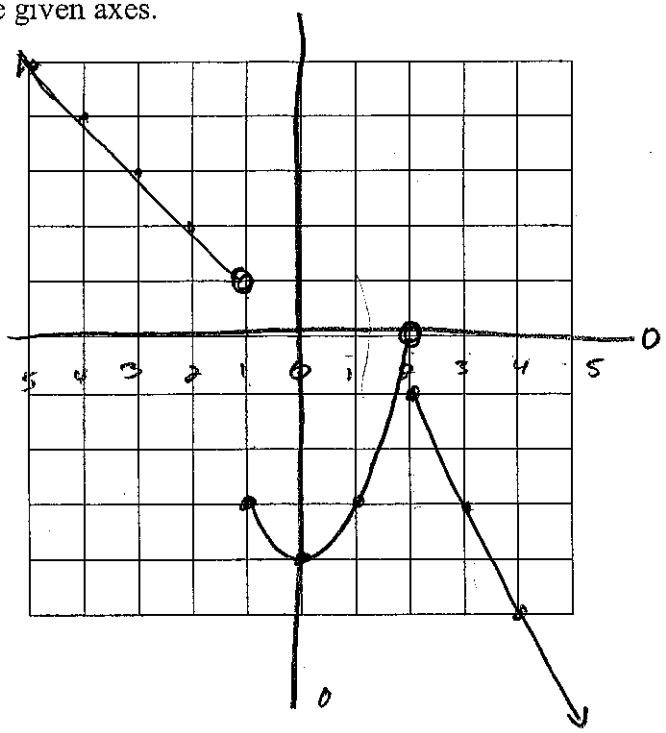
7. Graph the following piecewise function on the given axes.

$$f(x)=\begin{cases} |x| & \text{if} \quad x<-1 \\ x^2-4 & \text{if} \quad -1\le x<2 \\ 3-2x & \text{if} \quad x\ge 2 \end{cases}$$



4 pts
1 pt $|x|$
1 pt x^2-4
1 pt $3-2x$
1 pt correct endpoints

2pts 8. Find the equation of the line passing through the point (4, -1) and perpendicular to the line $2x-3y=3$.

1 pt slope
1 pt equation

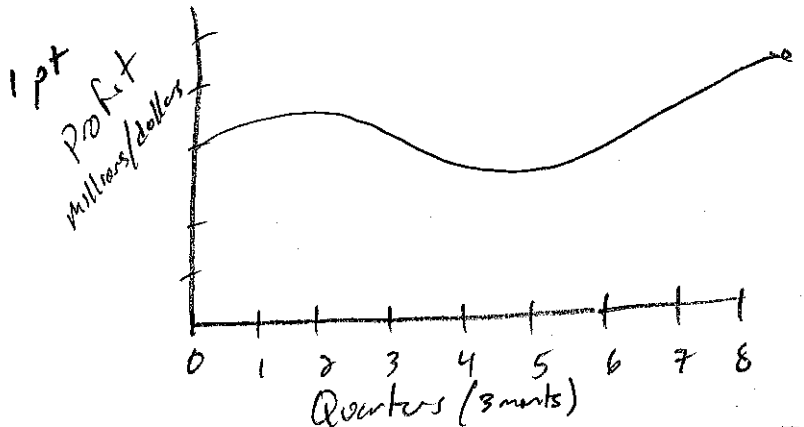
$$(y-(-1))=\frac{-3}{2}(x-4)$$

$-2x \quad -2x$

$$\frac{-3y}{-3}=\frac{3-2x}{-3}$$

$$y=-1+\frac{3}{2}x$$

2pts 9. **Economic Application:** Suppose a graph is given (none shown here) that indicates a company's quarterly profits. Describe or draw a graph that indicates what the axes might look like including units. How might the units on the axes help you to determine the units of the slope of the graph? Then, how might the slope of the graph indicate the success or failure of the company?



1pt the slope is in dollars/unit time

1pt pos/neg slope If the slope is positive the company is growing. If profits are negative the company's growth is shrinking. If the slope is extremely negative one might be wary to invest as the company is struggling. Even if the slope is extremely large in the positive direction the company shows great promise so invest!

10pts