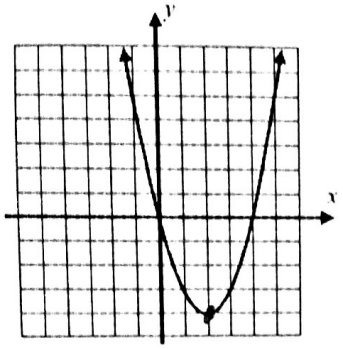
Name: _____
Date: _____
Class: _____

Algebra
Unit 8
HW 8-5

1) Using the graph of the quadratic function below, what would be the turning point? Give an interval that it is increasing on and an interval it is decreasing on.

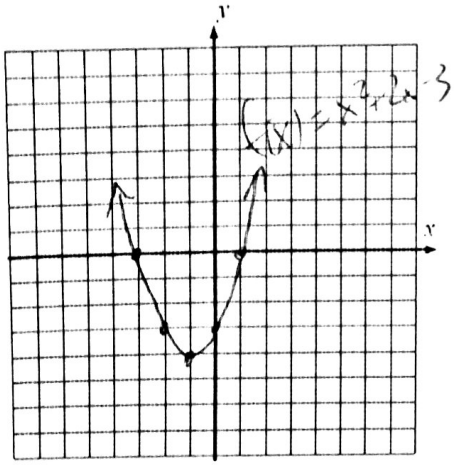


Turning pt → (-2, 4)

increasing → $-2 \leq x \leq \infty$

decreasing → $-\infty \leq x \leq -2$

2) On the graph, sketch $f(x) = x^2 + 2x - 3$. What is the vertex? Is it a maximum or minimum?



x	y
-3	0
-2	-3
-1	-4
0	-3
1	0

vertex (-1, -4)

minimum

3) Using the graph for #2 – what are the zeros of this function and over what range is the function negative?

$x = -3, x = 1$

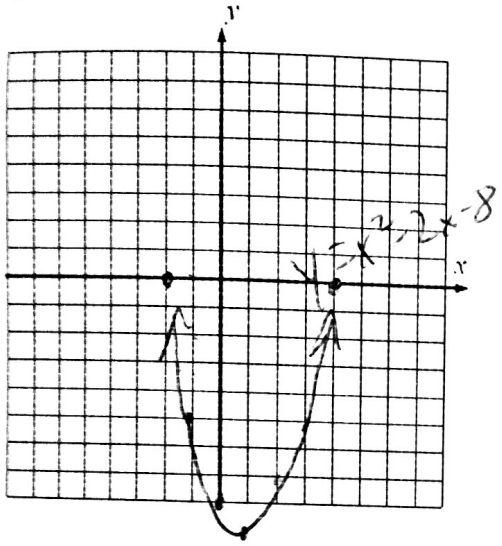
$-3 < x < 1$ → it's negative

4) The following table represents the input and output values of a quadratic function with a turning point of (3, -8). Fill in the rest of the table. Over this domain, what is the range of the function?

x	-1	0	1	2	3	4	5	6	7
$g(x)$	24	10	0	-6	-8	-6	0	10	24

range $-8 \leq g(x) \leq 24$

5) Graph: $y = x^2 - 2x - 8$



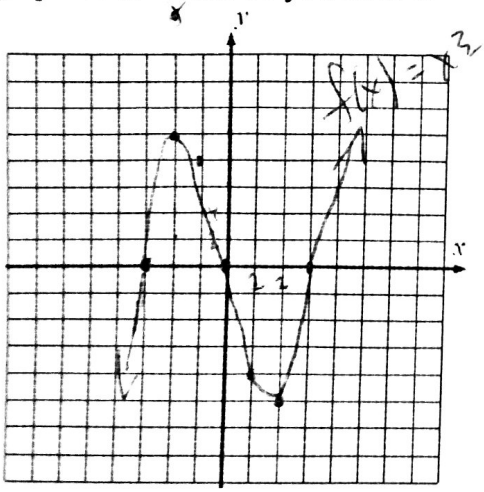
X	Y
-1	-5
0	-8
1	-9
2	-8
3	-5

6) In #5, using the graph, what would the factored form of the equation be?

Zeroes are -2 and 4 so $x = -2$ $x = 4$

$(x+2)(x-4) = 0$

7) Find the zeroes of this function by factoring: $f(x) = x^3 - 9x$ and also sketch a graph of it. What do you notice?



$0 = x^3 - 9x$

GCF $\rightarrow x$

$0 = x(x^2 - 9)$

$0 = x(x-3)(x+3)$

$x = 0$ $x - 3 = 0$ $x + 3 = 0$

$x = 3$ $x = -3$

X	Y
-3	0
-2	10
-1	8
0	0
1	-8
2	-10
3	0

Zeroes, Roots are 3 This time