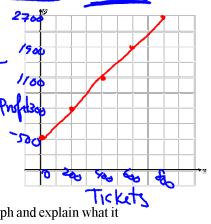
5.4 Linear Functions

A school drama club is presenting one performance of a play. The profit from the play is a function of the number of tickets sold. The function relating the profit , P dollars, and the number of tickets sold, T, is represented by the equation P = 4T - 500 where T < 800.

a) Plot a graph of P against T.

Tickets (T)	Profit (P)
0	-500
200	300
400	1100
600	1900
800	2700



b) Determine the slope of the graph and explain what it represents.

$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \frac{2700 - (-500)}{800 - 0} = \frac{3200}{800} = 4$

It costs $4 for one ticket.

c) Determine the P and T intercepts. Explain what they represent.

$P = 4T - 500$

y-int: -500 the cost to put on the production

x-int: $0 = 4T - 500$, $+500 \quad +500$, $\frac{500}{4} = \frac{4T}{4}$, $T = 125$ This is the # of tickets to break even.

d) State the domain and range

D: $0 \le T \le 800$

R: $-500 \le P \le 2700$

e) What is the maximum profit that can be made from the play?

$2700 when we sell 800 tickets.

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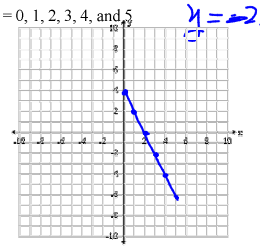
Graph 2x + y = 4 for x = 0, 1, 2, 3, 4, and 5

$y = -2x + 4$

x	y
0	4
1	2
2	0
3	-2
4	-4
5	-6



a) What are the intercepts and the slope of the graph?

x-int: (2, 0)

y-int: (0, 4)

Slope: -2

b) What is the domain and range of the graph?

D: $0 \le x \le 5$

R: $-6 \le y \le 4$

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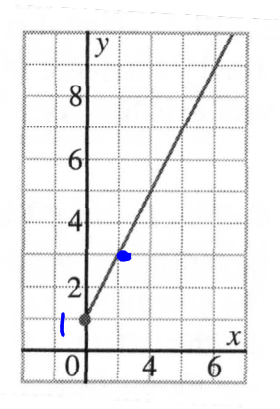
Consider the linear function defined by the graph



a) What are the domain and range of the graph?

D: $x \geq 0$ $0 \leq x$

R: $y \geq 1$ $1 \leq y$

b) Write an equation of the graph.

$y = 2x + 1$

Nov 2-1:45 PM

Pg. 280

2 odds

3, 5a, 8, 10, 12

Oct 31-1:54 PM