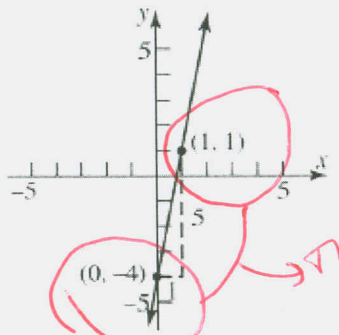
26 pts for work
4 pts for content
30 pts TOTAL

14. $g(x) = 5x - 4$

a. Slope = 5; y-intercept = -4

b. Plot the point $(0, -4)$. Use the slope to find an additional point by moving 1 unit to the right and 5 units up.



These 2 pts

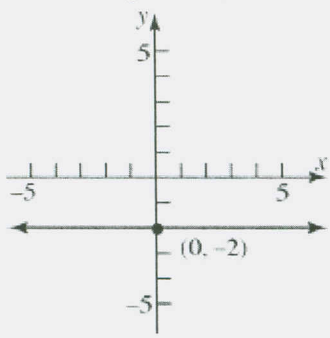
c. average rate of change = 5

d. increasing

20. $G(x) = -2$

a. Slope = 0; y-intercept = -2

b. Plot the point $(0, -2)$ and draw a horizontal line through it.



c. average rate of change = 0

d. constant

22. $g(x) = 3x + 12$

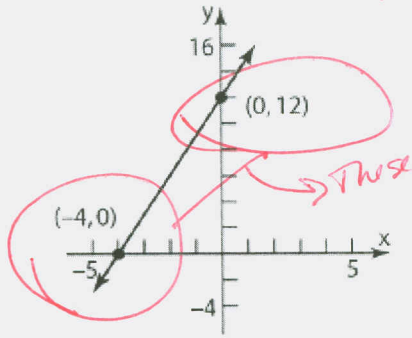
a. $3x + 12 = 0$

$3x = -12$

$x = -4$ → $(-4, 0)$

Report as ordered pair

b. y-intercept = 12 → $(0, 12)$



These 2 pts

28.

x	$y = f(x)$	Avg. rate of change $= \frac{\Delta y}{\Delta x}$
-2	$\frac{1}{4}$	
-1	$\frac{1}{2}$	$\frac{(\frac{1}{2} - \frac{1}{4})}{-1-(-2)} = \frac{\frac{1}{4}}{1} = \frac{1}{4}$
0	1	$\frac{(1 - \frac{1}{2})}{0-(-1)} = \frac{\frac{1}{2}}{1} = \frac{1}{2}$
1	2	
2	4	

2 pts Show two unequal slopes

Conclude 1 pt

This is not a linear function since the average rate of change is not constant.

30.

x	$y = f(x)$	Avg. rate of change $= \frac{\Delta y}{\Delta x}$
-2	-4	
-1	0	$\frac{0-(-4)}{-1-(-2)} = \frac{4}{1} = 4$
0	4	$\frac{4-0}{0-(-1)} = \frac{4}{1} = 4$
1	8	$\frac{8-4}{1-0} = \frac{4}{1} = 4$
2	12	$\frac{12-8}{2-1} = \frac{4}{1} = 4$

2 pts Show ALL slopes are same

Conclude 1 pt

This is a linear function with slope = 4, since the average rate of change is constant at 4.

35. $f(x)=4x-1;\quad g(x)=-2x+5$

a. $f(x)=0$

$4x-1=0$

$x=\frac{1}{4}$

b. $f(x)>0$

$4x-1>0$

$x>\frac{1}{4}$

The solution set is $\left\{x\middle|x>\frac{1}{4}\right\}$ or $\left(\frac{1}{4},\infty\right)$.

c. $f(x)=g(x)$

$4x-1=-2x+5$

$6x=6$

$x=1$

d. $f(x)\le g(x)$

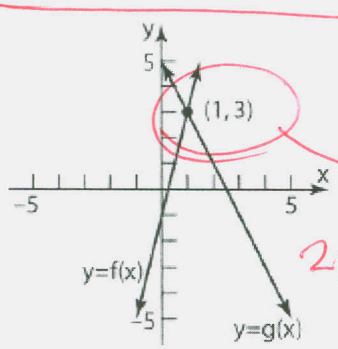
$4x-1\le -2x+5$

$6x\le 6$

$x\le 1$

The solution set is $\{x|x\le 1\}$ or $(-\infty,1]$.

e.



40. **a.** $f(x)=g(x)$ when their graphs intersect.

Thus, $x=2$.

b. $f(x)\le g(x)$ when the graph of f is below or intersects the graph of g. Thus, the solution is $\{x|\ x\le 2\}$ or $(-\infty,2]$.

48. $S(p)=-2000+3000p;\quad D(p)=10000-1000p$

a. Solve $S(p)=D(p)$.

$-2000+3000p=10000-1000p$

$4000p=12000$

$p=\frac{12000}{4000}=3$

$S(3)=-2000+3000(3)=7000$

Thus, the equilibrium price is \$3, and the equilibrium quantity is 7000 hot dogs.

b. Solve

$D(p)<S(p)\Rightarrow 10000-1000p<-2000+3000p$

$10000-1000p<-2000+3000p$

$12000<4000p$

$\frac{12000}{4000}<p$

$3<p$

The demand will be less than the supply when the price is greater than \$3.

c. The price will eventually be decreased.