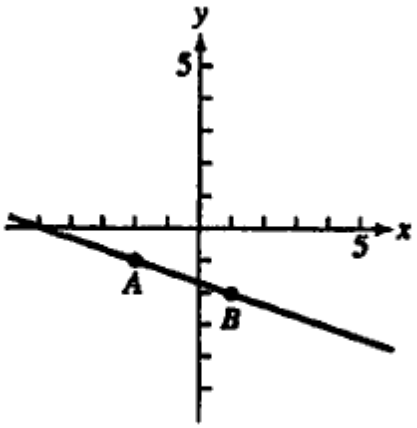
AP Calculus AB

1.1	#1,2,6,8,12,14,20,24,26,27,29,32,34,36,38, 41, 43

1.
(a) Y = 0.680x + 9.013
(b) m = 0.680; There is an average weight increase of 0.680 pounds per month of age.
(c)nothing to show (graphing calc)
(d) approximately 29.413 pounds

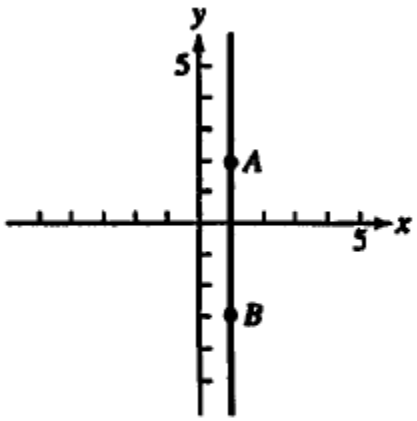
2. $\Delta x = -1-(-3) = 2$
$\Delta y = -2-2 = -4$

6. (a, c)



(b) $m = \dfrac{-2-(-1)}{1-(-2)} = \dfrac{-1}{3} = -\dfrac{1}{3}$

8. (a, c)



(b) $m = \dfrac{-3-2}{1-1} = \dfrac{-5}{0}$ (undefined)

This line has no slope.

12. (a) $x = -\pi$

(b) $y = 0$

14. $y = -1[x-(-1)]+1$
$y = -1(x+1)+1$

20. $y = \dfrac{1}{3}x - 1$

24. $m = \dfrac{-2-1}{2-(-2)} = \dfrac{-3}{4} = -\dfrac{3}{4}$

$y = -\dfrac{3}{4}[x-(-2)]+1$

$4y = -3(x+2)+4$

$4y = -3x-2$

$3x+4y = -2$

26. The line contains (0, 0) and (5, 2).

$m = \dfrac{2-0}{5-0} = \dfrac{2}{5}$

$y = \dfrac{2}{5}x$

27. $3x+4y=12$

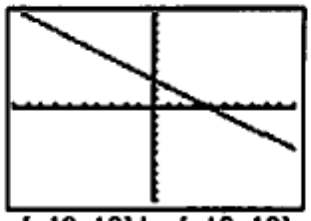
$4y=-3x+12$

$y=-\frac{3}{4}x+3$

(a) Slope: $-\frac{3}{4}$

(b) y-intercept: 3

(c)



[–10, 10] by [–10, 10]

29. $\frac{x}{3}+\frac{y}{4}=1$

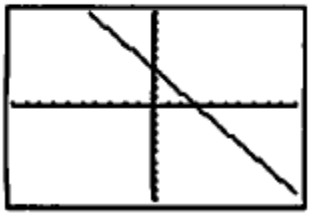
$\frac{y}{4}=-\frac{x}{3}+1$

$y=-\frac{4}{3}x+4$

(a) Slope: $-\frac{4}{3}$

(b) y-intercept: 4

(c)



[–10, 10] by [–10, 10]

32. (a) The given equation is equivalent to $y=-2x+4$.
The desired line has slope –2 and passes through (–2, 2):

$y=-2(x+2)+2$ or $y=-2x-2$.

(b) The desired line has slope $\frac{-1}{-2}=\frac{1}{2}$ and passes through (–2, 2):

$y=\frac{1}{2}(x+2)+2$ or $y=\frac{1}{2}x+3$.

34. (a) The given line is horizontal, so we seek a horizontal line through $\left(-1,\ \frac{1}{2}\right)$: $y=\frac{1}{2}$.

(b) We seek a vertical line through $\left(-1,\ \frac{1}{2}\right)$: $x=-1$.

36. $m=\frac{-4-(-1)}{4-2}=\frac{-3}{2}=-\frac{3}{2}$

$f(x)=-\frac{3}{2}(x-2)+(-1)=-\frac{3}{2}x+2$

Check: $f(6)=-\frac{3}{2}(6)+2=-7$, as expected.

Since $f(x)=-\frac{3}{2}x+2$, we have $m=-\frac{3}{2}$ and $b=2$.

38.
$$2 = \frac{2-(-2)}{x-(-8)}$$
$$2(x+8) = 4$$
$$x+8 = 2$$
$$x = -6$$

41. (a) The given equations are equivalent to $y = -\frac{2}{k}x + \frac{3}{k}$ and $y = -x + 1$, respectively, so the slopes are $-\frac{2}{k}$ and -1. The lines are parallel when $-\frac{2}{k} = -1$, so $k = 2$.

(b) The lines are perpendicular when $-\frac{2}{k} = \frac{-1}{-1}$, so $k = -2$.

43. Slope: $k = \frac{\Delta p}{\Delta d} = \frac{10.94-1}{100-0} = \frac{9.94}{100}$
$= 0.0994$ atmospheres per meter

At 50 meters, the pressure is

$p = 0.0994(50) + 1 = 5.97$ atmospheres.