A # 27 Pt I p. 343 # 1, 3, 5, 6

Pt II p. 349 # 1–17

Key

Part I 1. V = # of \$ (Value in millions)

n = # of years after 1995

(n, V)

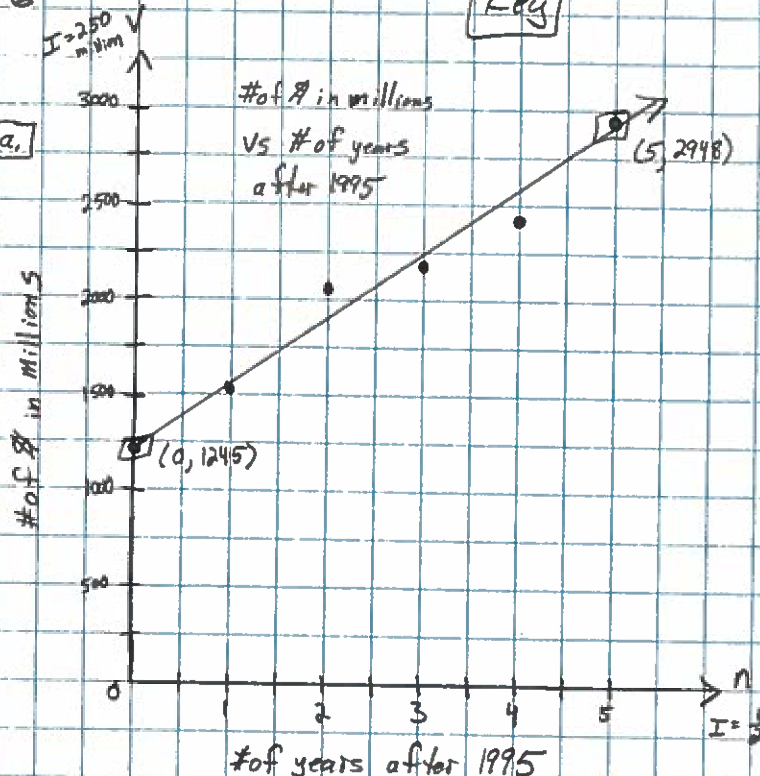
$(0, 1245)$ $(5, 2948)$

$m = \frac{\Delta y}{\Delta x} = \frac{2948 - 1245}{5 - 0} = \frac{1703}{5}$

$m = 340.6$ million per year

$b = 1245$

a.



b. $V = 340.6n + 1245$ where V is the value of schools in millions built n years after 1995.

c. $V = 3{,}600$ [in millions]

$V = 340.6n + 1245$

$3600 = 340.6n + 1245$

$2355 = 340.6n$

$n \approx 7$ years

I would expect the value of the school built in 2002 would be about \$3,600,000,000.

3. $m = \frac{\Delta \text{cost}}{\Delta \text{month}} = \frac{50 - 10}{5 - 0} = \frac{40}{5}$

$m = \$8$ per month

$(0, 10) \rightarrow$ Initial fee is \$10.

If the monthly fee stays the same $(m = 8)$ but the initial fee is lowered (less than \$10), a new equation could be $\boxed{y = 8x + 5}$.

5. P = Percent of Revenue from music clubs

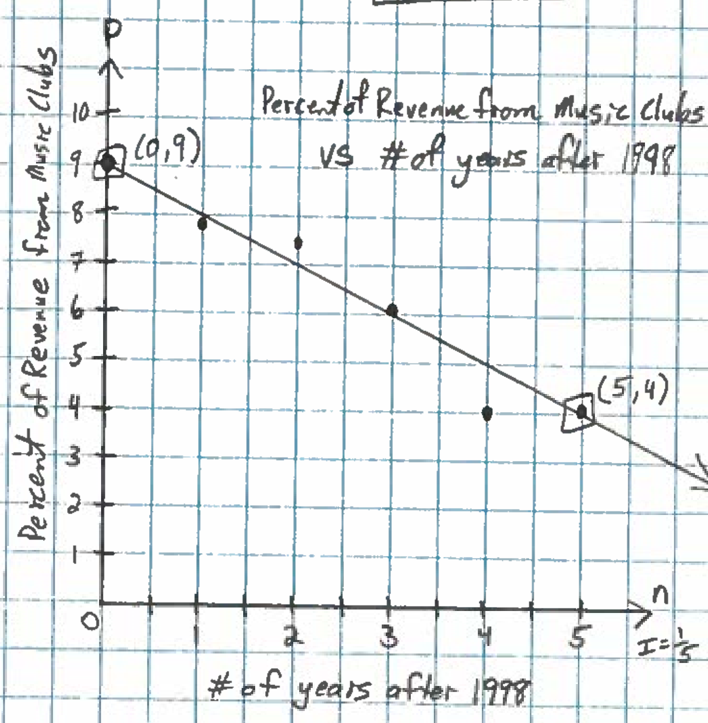
n = # of years after 1998

(n, P)

$(0, 9)$ $(5, 4)$

$m = \frac{\Delta P}{\Delta n} = \frac{9 - 4}{0 - 5} = \frac{5}{-5} = -1$ percent per year

$b = 9$



a. $P = -n + 9$ where P is the percent of revenue from music clubs n years after 1998.

b. The rate decrease by 1% each year.

c. Zero of the function $\rightarrow P = 0$

$P = -n + 9$

$0 = -n + 9$

$n = 9$

It will take 9 years for the percent to be 0. It should have happened around 2007.

A#27 continued

Key

① p. 343 #6

6. $m = \$4.00$ per game $\quad C = \#$ of \$ (Total cost)
Adult → $b = \$2.25$ $\quad g = \#$ of games
child → $b = \$1.75$

Since the slopes of both models are the same, the graphs would be parallel.

Adult: $C = 4g + 2.25$ where C is the total cost of bowling g games.

child: $C = 4g + 1.75$ where C is the total cost of bowling g games.

Part II p. 349 # 1-17

1. $m = 5$ y-int: $(0, -7)$

Slope-Int: $y = 5x + (-7)$

Standard: $-5x + y = -7$

2. $m = \frac{2}{5}$ y-int: $(0, -2)$

Slope-Int: $y = \frac{2}{5}x + (-2)$

$5(-\frac{2}{5}x + y) = (-2)5$

Standard: $-2x + 5y = -10$

3. $m = -\frac{4}{3}$ y-int: $(0, 1)$

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

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

Standard: $4x + 3y = 3$

4. $(-2, -8)$ $m = 3$

$y = mx + b$
$-8 = 3(-2) + b$
$-8 = -6 + b$
$b = -2$

Slope-Int: $y = 3x + (-2)$

Standard: $-3x + y = -2$

5. $(1, 1)$ $m = -4$

$y = mx + b$
$1 = -4(1) + b$
$1 = -4 + b$
$b = 5$

Slope-Int: $y = -4x + 5$

Standard: $4x + y = 5$

6. $(-1, 3)$ $m = -6$

$y = mx + b$
$3 = -6(-1) + b$
$3 = 6 + b$
$b = -3$

Slope-Int: $y = -6x + (-3)$

Standard: $6x + y = -3$

7. $(4, 5)$ $(2, 9)$

$m = \frac{\Delta y}{\Delta x} = \frac{9-5}{2-4} = \frac{4}{-2} = -2$

$y = mx + b$
$5 = -2(4) + b$
$5 = -8 + b$
$b = 13$

Slope-Int: $y = -2x + 13$

Standard: $2x + y = 13$

8. $(-2, 2)$ $(8, -3)$

$m = \frac{\Delta y}{\Delta x} = \frac{2-(-3)}{-2-8} = \frac{5}{-10} = -\frac{1}{2}$

$y = mx + b$
$2 = -\frac{1}{2}(-2) + b$
$2 = 1 + b$
$b = 1$

Slope-Int: $y = -\frac{1}{2}x + 1$

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

Standard: $x + 2y = 2$

9. $(3, 4)$ $(1, -6)$

$m = \frac{\Delta y}{\Delta x} = \frac{4-(-6)}{3-1} = \frac{10}{2} = 5$

$y = mx + b$
$4 = 5(3) + b$
$4 = 15 + b$
$b = -11$

Slope-Int: $y = 5x + (-11)$

Standard: $-5x + y = -11$

10. $m = 10$ $(6, 2)$

$y = mx + b$
$2 = 10(6) + b$
$2 = 60 + b$
$b = -58$

Slope-Int: $y = 10x + (-58)$

Standard: $-10x + y = -58$

11. $(-3, 2)$ $(6, -1)$

$m = \frac{\Delta y}{\Delta x} = \frac{2-(-1)}{-3-6} = \frac{3}{-9} = -\frac{1}{3}$

$y = mx + b$
$2 = -\frac{1}{3}(-3) + b$
$2 = 1 + b$
$b = 1$

Slope-Int: $y = -\frac{1}{3}x + 1$

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

Standard: $x + 3y = 3$

A#27 Continued

Key

Part II p. 349 #12-17

12. (2, 0) $y = -5x + 3$

Parallel → Same slope $(m = -5)$

$y = mx + b$ $\quad 0 = -5(2) + b$

$0 = -10 + b$

$b = 10$

Parallel: $y = -5x + 10$

Perpendicular → Opposite Reciprocal slope $(m = \frac{1}{5})$

$y = mx + b$

$0 = \frac{1}{5}(2) + b$

$0 = \frac{2}{5} + b$

$b = -\frac{2}{5}$

Perpendicular: $y = \frac{1}{5}x + (-\frac{2}{5})$

13. (-1, 4) $y = -x - 4$

Parallel: $m = -1$

$y = mx + b$ $\quad 4 = -1(-1) + b$

$4 = 1 + b$

$b = 3$

Parallel: $y = -x + 3$

Perpendicular: $m = 1$

$y = mx + b$ $\quad 4 = 1(-1) + b$

$4 = -1 + b$

$b = 5$

Perpendicular: $y = x + 5$

14. (4, -9) $y = \frac{1}{4}x + 2$

Parallel: $m = \frac{1}{4}$

$y = mx + b$ $\quad -9 = \frac{1}{4}(4) + b$

$-9 = 1 + b$

$b = -10$

Parallel: $y = \frac{1}{4}x + (-10)$

Perpendicular: $m = -4$

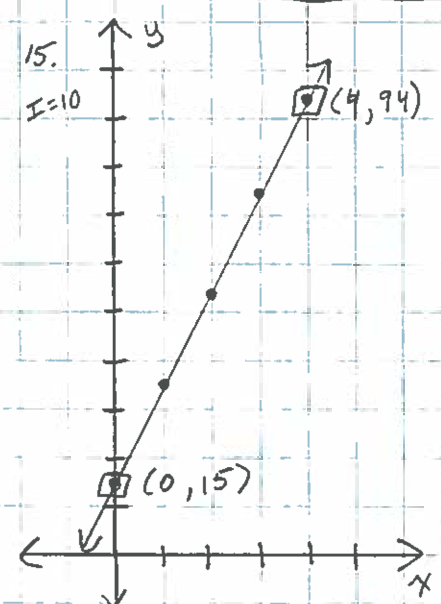
$y = mx + b$ $\quad -9 = (-4)(4) + b$

$-9 = -16 + b$

$b = 7$

Perpendicular: $y = -4x + 7$

15.

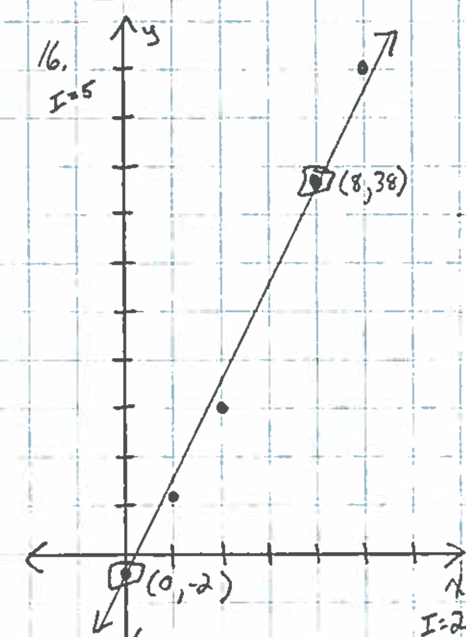


(0,15) (4,94)

$m = \frac{\Delta y}{\Delta x} = \frac{94-15}{4-0} = \frac{79}{4} = 19.75$

$b = 15$ $\quad$ **$y = 19.75x + 15$**

16.



(0, -2) (8, 38)

$m = \frac{\Delta y}{\Delta x} = \frac{38-(-2)}{8-0} = \frac{40}{8}$

$m = 5$ $\quad$ **$y = 5x + (-2)$**

$b = -2$

17. C = # of \$ (Total Cost)

p = # of people

m = \$3 per person

b = \$60 for the presentation + tour

C = 3P + 60 where C is the total cost of p people.