

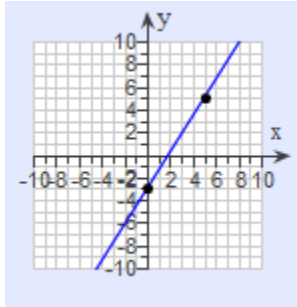
MATH 1324 Departmental Final Exam Review Sheet Key

1. $x = -2$

2. The publisher must produce and sell 3497 books.

3. (A) $m = \frac{8}{5}$ (B) $8x - 5y = 15$ (C) $y = \frac{8}{5}x - 3$

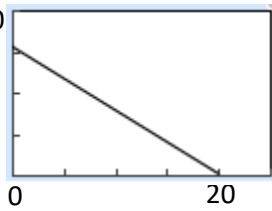
(D)



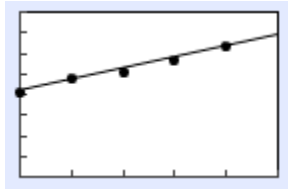
4. $y = 0.498x + 11.5$; between 360 – 511 cups of coffee

5. (A) $V = 156,000 - 7,700t$ (B) after six years the value is \$109,800 (C) when $t = 13.8$ years

(D) 200,000



6. (A)



(B) $R = 424.2$ Billion Dollars (\$424,200,000,000)

7. $x = -7, 0, 8$

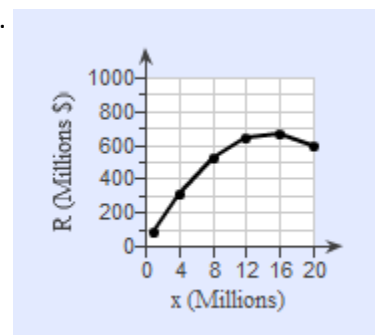
8. All real number except $x = -6$; Interval notation: $(-\infty, -6) \cup (-6, \infty)$

9. (A) $R(x) = 90x - 3x^2$; Domain: A. $[1, 20]$

(B)

Revenue	
x (Millions)	R(x) (Millions \$)
1	87
4	312
8	528
12	648
16	672
20	600

(C) D.



10. The graph of $g(x)$ is the graph of $f(x)$ shifted left 3 units and shifted up 5 units.

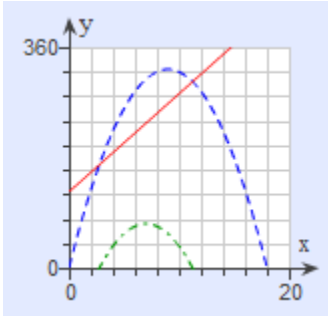
11. (A) x-intercepts: (2,0) and (4,0); y-intercept: (0, - 8)

(B) Vertex: (3,1)

(C) Maximum value: 1

(D) Range: ≥ 1 or $[1,\infty)$

12. (A) $P(x) = -4x^2 + 56x - 124$



(B) Equal

(C) 2.757, 11.243 YES

(D) $x = 7$; \$72; \$324; smaller compared

13. $y = \frac{4}{3}$

14. $x = 10$

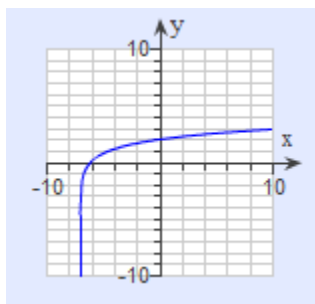
15. $f(x) = (x + 1)^2 - 9$ or $f(x) = x^2 + 2x - 8$

16. $\bar{C}(x) = \frac{0.00048(x-300)^3 + 228,000}{x}$

17. $x = \log 25$

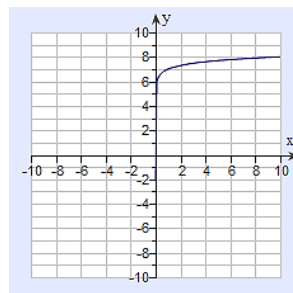
18. $x \approx 1.0160$

19. (A)



Increasing $(-7, \infty)$

(B)



Increasing $(0, \infty)$

20. Slope

21. y-coordinate; zero

22. \$8,314.09

23. $t = 5$ years

24. 2.75%

25. (A) \$12,835.72 (B) \$8,671,35

26. \$39,176

27. \$924.03

28. \$44.38

29. (10,4)

30. No Solution

$$31. \left[\begin{array}{cc|c} 1 & -3 & 2 \\ -12 & 18 & 24 \end{array} \right]$$

$$32. \left[\begin{array}{cc|c} 1 & -\frac{2}{5} & \frac{1}{5} \\ 0 & 0 & -6 \end{array} \right] \text{ No Solution}$$

$$33. \left[\begin{array}{cc|c} 1 & 4 & 2 \\ 0 & 0 & 0 \end{array} \right] \text{ Infinite Solutions – Parameter } x_1 = 2 - 4t \text{ and } x_2 = t$$

$$34. \left[\begin{array}{cc|c} 1 & 0 & -2 \\ 0 & 1 & 1 \end{array} \right], \text{ One Solution – } x_1 = -2 \text{ and } x_2 = 1$$

$$35. \left[\begin{array}{cc|c} 1 & 0 & -10 \\ 0 & 1 & 2 \end{array} \right] -4R_2 + R_1 \Rightarrow R_1$$

$$36. \left[\begin{array}{cc} -14 & 5 \\ -5 & -16 \end{array} \right]$$

$$37. \left[\begin{array}{cc} 1 & 3 \\ 3 & -5 \end{array} \right] \text{ Yes}$$

$$38. \left[\begin{array}{cccc} 49 & -49 & -63 & -49 \\ -63 & 63 & 77 & -49 \end{array} \right]$$

39. $\begin{bmatrix} 30 \\ -36 \end{bmatrix}$

40. $\begin{bmatrix} 27 & 2 \\ -40 & 48 \end{bmatrix}$

41. $\begin{bmatrix} 27 & 45 \\ 63 & 81 \end{bmatrix}$

42. $[-20]$

43. Not Possible

44. $\begin{bmatrix} 4 & 3 \\ -3 & -2 \end{bmatrix}$

45. $\begin{bmatrix} -5 & 3 \\ 3 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 8 \\ -30 \end{bmatrix}$ then $\begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} -\frac{6}{21} & -\frac{3}{21} \\ -\frac{3}{21} & -\frac{5}{21} \end{bmatrix} \begin{bmatrix} 8 \\ -30 \end{bmatrix}$, so $\begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 2 \\ 6 \end{bmatrix}$ or B. (2,6)

46. D. $5x + 2y \leq -10$

47. $x + y < 900$

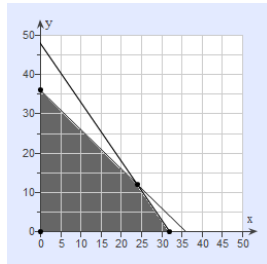
48. region III; $(\frac{27}{5}, \frac{16}{5})$

49. $12x + 8y \leq 384$

$x + y \leq 36$

$x \geq 0$

$y \geq 0$



Corners	P = 40x + 30y
(0,36)	\$1080
(24,12)	\$1320
(32,0)	\$1280
(0,0)	\$0

Max 24 trick and 12 slalom

Corners	P = 40x + 15y
(0,36)	\$540
(24,12)	\$1140
(32,0)	\$1280
(0,0)	\$0

Max 32 trick and 0 slalom

Corners	P = 40x + 45y
(0,36)	\$1620
(24,12)	\$1500
(32,0)	\$1280
(0,0)	\$0

Max 0 trick and 36 slalom

50. $56x + 7y \geq 392$

$5x + y \leq 36$

$x > 0$

$y > 0$

Corners	C = 1100x + 120y
(7,0)	\$7700
(2,40)	\$7000
(10,0)	\$11,000

Min 2 Buses and 40 Vans for \$7000

