

# IM2 Book 1 Selected Answers

IM2 Dream Team

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1.  $x = -3$

2.  $-$

3. (a)  $x(x + 4)$   
 (b)  $3x(x - 5)$   
 (c)  $-x(2x + 7)$

4. (a)  $x = 0, 4$   
 (b)  $x = 0, 5$   
 (c)  $x = 0, -\frac{7}{2}$

|    |              |     |                                 |                |
|----|--------------|-----|---------------------------------|----------------|
|    | $2 \leq x$   | $-$ | all values that are at least 2  | $-$            |
| 5. | $-4 < x < 0$ | $-$ | $-$                             | $(-4, 0)$      |
|    | $x < 1$      | $-$ | all values that are less than 1 | $(-\infty, 1)$ |

6. Answers may vary. Soln:  $(0, 5)$ . Non-soln:  $(0, 0)$ .

7.  $4a^2, 2a^2$

8. (a)  $-$   
 (b)  $24 \leq x$

9.  $(x + 4)(x + 1)$ . 4 and 1 add to 5 and multiply to 4.

10.  $x^2 + (q + p)x + pq$ .  $\nabla = (q + p)$ .  $\Delta = pq$ .

11. (a)  $-$   
 (b)  $37 \leq 37$   
 (c)  $-$   
 (d)  $x \geq 18$

12.  $x = 1, -4, \frac{3}{2}$

13. (a) Answers may vary.  
 System soln:  $(2, 4)$   
 Soln to one eqn but not the other:  $(0, 0)$   
 Not a system soln:  $(0, 0)$

- (b) –  
 (c) One solution.

14. Answers may vary.

$$\begin{cases} y = x \\ y = x + 1 \end{cases}$$

15. Answers may vary.

$$\begin{cases} y = x \\ 2y = 2x \end{cases}$$

16.  $(3x)^2$

17.  $x > -5$

18. (a)  $x \leq -10$   
 (b)  $x \leq -10$

19. (a)  $x = -4$   
 (b)  $x = 3, 5$   
 (c)  $x = -1, 7$

20. (a)  $(\frac{1}{2}, \frac{1}{3})$   
 (b)  $(1, -2)$

21. (a) –  
 (b)  $y = x^2$

22. (a)  $f(2) = 5$   
 $f(-4) = -1$   
 (b)  $x = -1$

23. (a)  $2x + y = 3$   
 (b) No solutions

|     | Words                           | Function Formula |
|-----|---------------------------------|------------------|
| 24. |                                 | $f(x) = 2x$      |
|     |                                 | $f(x) = 5x - 1$  |
|     | divide the input by 2 and add 5 |                  |

25. (a)  $f(-3) = 3$   
 $f(0) = 0$   
 $f(2) = 2$   
 (b)  $x = \pm 4$

26. (a)  $-$   
(b)  $6$   
(c)  $x = \pm 10$
27.  $(3x + 4)(x - 3)$
28. (a)  $-7 \leq x$   
(b)  $x < 4$
29. (a)  $5$   
(b)  $12$   
(c)  $|x - y|$
30. No
31.  $x \geq 0$
32.  $|a - b| = |b - a|$
33.  $(4x + 1)(x + 5)$