Additional Mathematics Exercise 1 Answers

(*Quadratic Equations and Quadratic Functions*)

1. (a) 5, 1 (b) $\frac{\sqrt{3} \pm \sqrt{7}}{4}$
2. $\frac{1}{4}$ (repeated)
3. $\frac{3}{4}, \frac{3}{10}$
4. 8
5. $\frac{5 \pm \sqrt{37}}{2}$
6. 1.26
7. 5.32
8. $\left(\frac{3+\sqrt{3}}{2}, \frac{1-\sqrt{3}}{2}\right)$ or $\left(\frac{3-\sqrt{3}}{2}, \frac{1+\sqrt{3}}{2}\right)$
9. 1
10. (a) two unequal real roots, both irrational.
    (b) two unequal real roots, both irrational.
    (c) two unequal real roots, both irrational.
    (d) two unequal real roots, both rational.
11. $k \leq \frac{3}{2}$
12. $k \geq -1$
13. –
14. $\frac{-11 \pm \sqrt{161}}{4}$
15. –
16. 4
17. (a) $\frac{10}{9}$ (b) $\frac{10}{27}$ (c) $\frac{2}{3}$ (d) $6\frac{2}{3}$
18. (a) $2x^2 + 11x + 10 = 0$ (b) $2x^2 + 5x - 2 = 0$
    (c) $2x^2 - x - 46 = 0$ (d) $20x^2 - 101x + 127 = 0$
19. $x = 2$, $k = 10$
20. $b = -c$
21. $m = -1$, $x = 0$ or -1
22. –
23. $m = -3$, $n = 28$

24. (a) $q(q-1)^2 - p^2(p^2-4q)$

25. $a=\frac{1}{8}, b=-\frac{3}{4}, c=\frac{25}{8}$

26. Maximum value = 3 when $x=\frac{2}{3}$.

27. –

28. any real number

29. (a) – (b) $h=\pm k$

30. $\pm\frac{9}{8}$

31. (a) no real solutions (b) –1.5 (c) –0.5, 3

32. 2, –1

33. –3, –2, 1, 2

34. –1, $\frac{9}{7}$

35. 4, –1

36. –1, 0, 2, 3

37. $-\frac{1}{12}, \frac{7}{12}$

38. $\frac{3}{4}, \frac{3}{2}$

39. 0, 2

40. $\frac{1}{2}$

41. (a) – (b) –1, 3