

1. a) $x^2 - 25$ b) $x^2 - 6x + 9$ c) $4x^2 - 4x + 1$ d) $8x^3 - 12x^2 + 6x - 1$

e) $27x^3 - 125$ f) $-2x^2 - 8x + 14$

2. a) 2 b) 5 c) $-7, \frac{1}{2}, \frac{8}{5}$ d) $\frac{1}{2}$ e) $0, \frac{1}{2}$

3. a) $a^4(a+1)$ b) $3(x-4)(x+4)$ c) $4a^5 - 4a$

4. a) $-2x(x+7)(x-9)$ b) $4(x+2)(x-8)$ b) $x^2 + 2x + 26$ c) $-2(x-3+\sqrt{7})(x-3-\sqrt{7})$

d) $2(x+3)\left(x-\frac{5}{2}\right)$

5. a) $6\sqrt{2}$ b) $69 - 16\sqrt{5}$ c) $-2 - \frac{1}{2}\sqrt{10}$ d) $14 - 6\sqrt{2}$

6. a) $3 - \sqrt{2}, \sqrt{2} + 3$.

b) Check $x = 3 - \sqrt{2}$

$$\text{LHS} = (3 - \sqrt{2})^2 + 7 = 9 - 6\sqrt{2} + 2 + 7 = 18 - 6\sqrt{2}$$

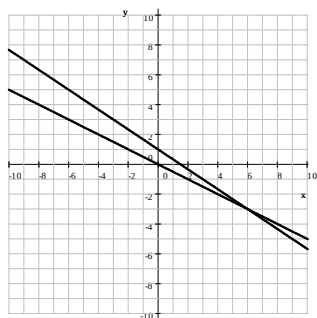
$$\text{RHS} = 6(3 - \sqrt{2}) = 18 - 6\sqrt{2}$$

Check $3 + \sqrt{2}$

$$\text{LHS} = (3 + \sqrt{2})^2 + 7 = 9 + 6\sqrt{2} + 2 + 7 = 18 + 6\sqrt{2}$$

$$\text{RHS} = 6(3 + \sqrt{2}) = 18 + 6\sqrt{2}$$

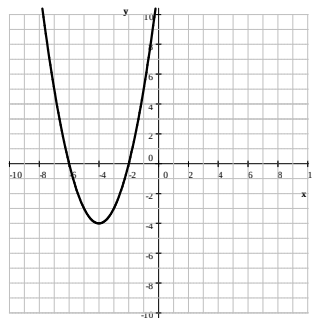
7. $(6, -3)$



8. Vertex: $(-4, -4)$ x -intercepts: $(-6, 0)$ and $(-2, 0)$

y -intercept: $(0, 12)$

additional points: $(-3, -3), (-1, 5)$



9. $\sqrt{41}$ unit

10. $8\sqrt{21} \text{ cm}^2$

11. a) $y = \frac{2}{5}x - 6$ b) $y = -\frac{5}{2}x + 23$ c) $y = -\frac{1}{2}x + 3$

12. 49 nickels and 23 dimes

13. a) 1872 feet

b) 2 seconds and 14 seconds

c) 19 seconds