Answer Key · Lesson 9.5: Factoring by Grouping and Factoring Completely

School Launch · Algebra I · Unit 9 · Worksheet A · for the parent

Key

1. $(x-5)\left(x^2+3\right)$

Factor completely: $x^3-5x^2+3x-15$.

2. $(x-2)\left(x^2+3\right)$

Factor completely: x^3-2x^2+3x-6.

3. $(x+3)\left(x^2+1\right)$

Factor completely: x^3+3x^2+x+3.

4. $(x-4)\left(x^2+4\right)$

1. Group in pairs: $x^2(x-4)+4(x-4)$
2. Factor completely: $(x-4)\left(x^2+4\right)$

Factor completely: $x^3-4x^2+4x-16$.

5. $(x-7)\left(x^2+1\right)$

1. Group in pairs: $x^2(x-7)+x-7$
2. Factor completely: $(x-7)\left(x^2+1\right)$

Factor completely: x^3-7x^2+x-7.

6. $2(x+1)\left(x^2+1\right)$

1. GCF is 2: $2x^3+2x^2+2x+2\left(x^3+x^2+x+1\right)$
2. Group in pairs: $x^2(x+1)+x+1$
3. Factor completely: $2(x+1)\left(x^2+1\right)$

Factor completely: $2x^3+2x^2+2x+2$.

7. $2(x-7)\left(x^2+4\right)$

1. GCF is 2: $2x^3-14x^2+8x-56=2\left(x^3-7x^2+4x-28\right)$
2. Group in pairs: $x^2(x-7)+4(x-7)$
3. Factor completely: $2(x-7)\left(x^2+4\right)$

Factor completely: $2x^3-14x^2+8x-56$.

8. $(x-3)(x-1)(x+3)$

1. Group in pairs: $x^2(x-1)-9(x-1)$
2. Factor completely: $(x-3)(x-1)(x+3)$

Factor completely: x^3-x^2-9x+9.

9. $2(x-9)(x-4)(x+4)$

1. GCF is 2: $2x^3-18x^2-32x+288=2\left(x^3-9x^2-16x+144\right)$
2. Group in pairs: $x^2(x-9)-16(x-9)$
3. Factor completely: $2(x-9)(x-4)(x+4)$

Factor completely: $2x^3-18x^2-32x+288$.

10. $2(x-5)(x+1)(x+5)$

1. GCF is 2: $2x^3+2x^2-50x-50=2\left(x^3+x^2-25x-25\right)$
2. Group in pairs: $x^2(x+1)-25(x+1)$
3. Factor completely: $2(x-5)(x+1)(x+5)$

Factor completely: $2x^3+2x^2-50x-50$.