

# M10

# Factoring Synthesis

Factor completely

1.  $3x^2 + 24x + 36$

3.  $-x^3 - 4x^2 + 21x$

5.  $8x^2 + 30x + 18$

7.  $8ax^2 - 31axy - 4ay^2$

9.  $6x^4 - 96$

11.  $27x^2 - 75y^2$

13.  $x^4 - 81$

15.  $12ab^2 + 48a$

17.  $5ay^2 - 70ay + 245a$

19.  $-4x^2 - 36xy - 81y^2$

21.  $9m^4 - 37m^2n^2 + 4n^4$

23.  $16a^4 - 72a^2b^2 + 81b^4$

25.  $p^8 - 5p^4q^4 + 4q^8$

27.  $\frac{x^2}{2} - \frac{2y^2}{9}$

29.  $a^2(a - 3) + 4a(3 - a) - 21(a - 3)$

31.  $x^2 + 4x + 4 - y^2$

2.  $2ax^2 - 6ax - 80a$

4.  $5x^2 - 55xy + 120y^2$

6.  $-6y^2 - 18y + 24$

8.  $5a^5 + 17a^4 + 12a^3$

10.  $5a^2 - 80b^2$

12.  $-10t^2 + 360$

14.  $7x^8 - 7$

16.  $7x^2 + 56x + 112$

18.  $9a^2x - 30abx + 25b^2x$

20.  $x^4 - 3x^2 - 54$

22.  $5y^4 - 65y^2 + 180$

24.  $72 + 10x^2 - 2x^4$

26.  $\frac{a^2}{25} - \frac{b^2}{36}$

28.  $x(x - 5) + 8(x - 5)$

30.  $(a - 5)^2 - (b + 4)^2$

32.  $a^2 - x^2 + 6x - 9$

## Answers

1.  $3(x+2)(x+6)$
2.  $2a(x-8)(x+5)$
3.  $-x(x+7)(x-3)$
4.  $5(x-3y)(x-8y)$
5.  $2(x+3)(4x+3)$
6.  $-6(y+4)(y-1)$
7.  $a(8x+y)(x-4y)$
8.  $a^3(5a+12)(a+1)$
9.  $6(x^2+4)(x+2)(x-2)$
10.  $5(a+4b)(a-4b)$
11.  $3(3x+5y)(3x-5y)$
12.  $-10(t+6)(t-6)$
13.  $(x^2+9)(x+3)(x-3)$
14.  $7(x^4+1)(x^2+1)(x+1)(x-1)$
15.  $12a(b^2+4)$
16.  $7(x+4)^2$
17.  $5a(y-7)^2$
18.  $x(3a-5b)^2$
19.  $-(2x+9y)^2$
20.  $(x^2+6)(x+3)(x-3)$
21.  $(3m+n)(3m-n)(m+2n)(m-2n)$
22.  $5(y+3)(y-3)(y+2)(y-2)$
23.  $(2a-3b)^2(2a+3b)^2$
24.  $-2(x^2+4)(x+3)(x-3)$
25.  $(p^2-2q^2)(p^2+2q^2)(p^2+q^2)(p+q)(p-q)$
26.  $\left(\frac{a}{5} + \frac{b}{6}\right)\left(\frac{a}{5} - \frac{b}{6}\right)$
27.  $2\left(\frac{x}{2} + \frac{y}{3}\right)\left(\frac{x}{2} - \frac{y}{3}\right)$
28.  $(x-5)(x+8)$
29.  $(a-3)(a-7)(a+3)$
30.  $(a+b-1)(a-b-9)$
31.  $(x+2+y)(x+2-y)$
32.  $(a-x+3)(a+x-3)$