

1. Factor completely. Use the factoring by grouping method.

a.  $x^2 + 3x + 2x + 6$

$$x(x+3) + 2(x+3)$$

$$(x+2)(x+3)$$

b.  $7x^2 - 4x - 11$   $7 \times 11 = 77$

$$7x^2 + 7x - 11x - 11$$

$$7x(x+1) - 11(x+1)$$

$$(x+1)(7x-11)$$

c.  $21x^2 - 13x + 2$   $21 \times 2 = 42$

$$21x^2 - 7x - 6x + 2$$

$$7x(3x-1) - 2(3x-1)$$

$$(3x-1)(7x-2)$$

d.  $20a^3 + 37a^2 + 8a$   $20 \times 8 = 160$

$$a(20a^2 + 32a + 8)$$

$$a[4a(sa+8) + 1(sa+8)]$$

$$a(sa+8)(4a+1)$$

e.  $6x^2 - 11x - 10$   $6 \times 10 = 60$

$$6x^2 + 4x - 15x - 10$$

$$2x(3x+2) - 5(3x+2)$$

$$(3x+2)(2x-5)$$

f.  $162a^4 - 72a^2 + 8$

$$2(81a^4 - 36a^2 + 4)$$

$$2(81a^4 - 18a^2 - 18a^2 + 4)$$

$$2[9a^2(9a^2 - 2) - 2(9a^2 - 2)]$$

$$2(9a^2 - 2)(9a^2 - 2)$$

g.  $5x^4 - 3x^2 + 25x^2 - 15$

$$x^2(5x^2 - 3) + 5(5x^2 - 3)$$

$$(5x^2 - 3)(x^2 + 5)$$

h.  $8x^2 - x - 9$

$$8x^2 + 8x - 9x - 9$$

$$8x(x+1) - 9(x+1)$$

$$(8x-9)(x+1)$$

i.  $16y^2 - 34y + 18$

$$16y^2 - 16y - 18y + 18$$

$$16y(y-1) - 18(y-1)$$

$$(16y-18)(y-1)$$

$$2(8y-9)(y-1)$$

j.  $5 - 12x + 7x^2$

$$7x^2 - 12x + 5$$

$$7x^2 - 7x - 5x + 5$$

$$7x(x-1) - 5(x-1)$$

$$(x-1)(7x-5)$$

k.  $36x^2 + 6x + 1$

prime

l.  $30a^2 + 5ab - 30b^2$

$$5(6a^2 + ab - 6b^2)$$

$$5(6a^2 + 6ab - 6b^2 - 5ab)$$

$$5(6a^2 + 6ab - 6b^2 - 5ab)$$

$$5(6a^2 + ab - 6b^2)$$