

Review Exercise Set 3

Exercise 1: Completely factor the following trinomial.

$$a^2 + 6a - 40$$

Exercise 2: Completely factor the following trinomial.

$$x^2 - 5x - 14$$

Exercise 3: Completely factor the following trinomial.

$$n^2 + 4n - 5$$

Exercise 4: Completely factor the following trinomial.

$$x^2 + 2xy - 63y^2$$

Exercise 5: Completely factor the following trinomial.

$$n^4 - 3n^3 - 40n^2$$

Review Exercise Set 3 Answer Key

Exercise 1: Completely factor the following trinomial.

$$a^2 + 6a - 40$$

Product of Factors of -40	Sum of Factors
$1(-40) = -40$	$1 + (-40) = -39$
$2(-20) = -40$	$2 + (-20) = -18$
$4(-10) = -40$	$4 + (-10) = -6$
$5(-8) = -40$	$5 + (-8) = -3$
$8(-5) = -40$	$8 + (-5) = 3$
$10(-4) = -40$	$10 + (-4) = 6$
$20(-2) = -40$	$20 + (-2) = 18$
$40(-1) = -40$	$40 + (-1) = 39$

The factors of 10 and -4 will provide the coefficient of the middle term of the trinomial, so the trinomial will factor as:

$$a^2 + 6a - 40 = (a + 10)(a - 4)$$

Exercise 2: Completely factor the following trinomial.

$$x^2 - 5x - 14$$

Product of Factors of -14	Sum of Factors
$1(-14) = -14$	$1 + (-14) = -13$
$2(-7) = -14$	$2 + (-7) = -5$
$7(-2) = -14$	$7 + (-2) = 5$
$14(-1) = -14$	$14 + (-1) = 13$

The factors of 2 and -7 will provide the coefficient of the middle term of the trinomial, so the trinomial will factor as:

$$x^2 - 5x - 14 = (x + 2)(x - 7)$$

Exercise 3: Completely factor the following trinomial.

$$n^2 + 4n - 5$$

Product of Factors of -5

$$1(-5) = -5$$

$$5(-1) = -5$$

Sum of Factors

$$1 + (-5) = -4$$

$$5 + (-1) = 4$$

The factors of 5 and -1 will provide the coefficient of the middle term of the trinomial, so the trinomial will factor as:

$$n^2 + 4n - 5 = (n + 5)(n - 1)$$

Exercise 4: Completely factor the following trinomial.

$$x^2 + 2xy - 63y^2$$

Product of Factors of -63

$$1(-63) = -63$$

$$3(-21) = -63$$

$$7(-9) = -63$$

$$9(-7) = -63$$

$$21(-3) = -63$$

$$63(-1) = -63$$

Sum of Factors

$$1 + (-63) = -62$$

$$3 + (-21) = -18$$

$$7 + (-9) = -2$$

$$9 + (-7) = 2$$

$$21 + (-3) = 18$$

$$63 + (-1) = 62$$

The factors of 9 and -7 will provide the coefficient of the middle term of the trinomial. Since the last term contains the factor y^2 we must split it up just like the first term, so the trinomial will factor as:

$$x^2 + 2xy - 63y^2 = (x + 9y)(x - 7y)$$

Exercise 5: Completely factor the following trinomial.

$$n^4 - 3n^3 - 40n^2$$

First, factor out the GCF of n^2 :

$$n^4 - 3n^3 - 40n^2 = n^2(n^2 - 3n - 40)$$

Exercise 5 (Continued):

Now find the factors of -40 that will factor the trinomial:

Product of Factors of -40	Sum of Factors
$1(-40) = -40$	$1 + (-40) = -39$
$2(-20) = -40$	$2 + (-20) = -18$
$4(-10) = -40$	$4 + (-10) = -6$
$5(-8) = -40$	$5 + (-8) = -3$
$8(-5) = -40$	$8 + (-5) = 3$
$10(-4) = -40$	$10 + (-4) = 6$
$20(-2) = -40$	$20 + (-2) = 18$
$40(-1) = -40$	$40 + (-1) = 39$

The factors of 5 and -8 will provide the coefficient of the middle term of the trinomial, so the trinomial will factor as:

$$\begin{aligned}n^4 - 3n^3 - 40n^2 &= n^2(n^2 - 3n - 40) \\ &= n^2(n + 5)(n - 8)\end{aligned}$$