

Math 017 Review for Exam 6

1. Factor completely and check your answer by multiplying:

- (a) $25x^2 - 64y^2$ (b) $x^2 - 14x + 24$ (c) $16x^2 - 8xy + y^2$
(d) $25x^2 + 30x + 9$ (e) $x^2 + 5xy - 36y^2$ (f) $2x^2 - 13x + 20$
(g) $3x^2 - xy - 4y^2$ (h) $16x^2 - 1$ (i) $3x^3 - 12x^2 + 2x - 8$

2. Factor completely:

- (a) $4x^3y + 24x^2y - 64xy$ (b) $72x^4y - 2x^2y^3$ (c) $6x^3 - 27x^2 + 12x$
(d) $x^3 + 3x^2 - 4x - 12$ (e) $81x^4 - 1$ (f) $x^3 - 6x^2y - 9x + 54y$
(g) $x^3y^2 - 5x^2y + 6x$ (h) $3x^2y - 42xy + 147y$ (i) $4x^2 + 25$

3. Solve for x and check your answer(s) by replacing x with your answer(s) in the original equation.

- (a) $x^2 + 24 = 11x$ (b) $10x = 2x^2$ (c) $2x^2 + 4 = 9x$
(d) $x^2 + 4x = -7(x + 4)$ (e) $9x^2 - 4 = 0$ (f) $x(x + 3) = 88$
(g) $x^2 + 17x + 72 = 0$ (h) $4x(2x - 7) = 0$ (i) $(0.2x - 0.7)(x - \frac{3}{4}) = 0$

4. Use quadratic equations to solve each the following.

- (a) The length of a rectangle is 7 feet more than the width. The area of the rectangle is 120 square feet. Find the length and width of the rectangle.
- (b) In a baseball league each team plays each other team exactly once. There are a total of 132 games. How many teams are there?
- (c) The product of two consecutive page numbers of a book is 240. Find the page numbers.
- (d) The product of two consecutive positive odd integers is 323. Find the integers.
- (e) The product of two consecutive positive even integers is 224. Find the integers.
- (f) The height in feet of a rocket at time t seconds after the fuel runs out is given by the formula $h = -16t^2 + 24t + 40$. How long after the fuel runs out does it take the rocket to reach the ground?
- (g) The profit p in dollars of a paint making x gallons of paint is given by the formula $p = -0.1x^2 + 13x - 360$. How many gallons of paint does the manufacturer need to make in order to break even?

Answers to Review for Exam 6

1.

(a) $(5x + 8y)(5x - 8y)$

(b) $(x - 12)(x - 2)$

(c) $(4x - y)^2$

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

(e) $(x + 9y)(x - 4y)$

(f) $(2x - 5)(x - 4)$

(g) $(3x - 4y)(x + y)$

(h) $(4x + 1)(4x - 1)$

(i) $(3x^2 + 2)(x - 4)$

2.

(a) $4xy(x + 8)(x - 2)$

(b) $2x^2y(6x + y)(6x - y)$

(c) $3x(2x - 1)(x - 4)$

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

(e) $(9x^2 + 1)(3x + 1)(3x - 1)$

(f) $(x + 3)(x - 3)(x - 6y)$

(g) $x(xy - 3)(xy - 2)$

(h) $3y(x - 7)^2$

(i) Can't be factored over the field of real numbers.

3.

(a) $x = 3$ or 8

(b) $x = 0$ or 5

(c) $x = \frac{1}{2}$ or 4

(d) $x = -4$ or -7

(e) $x = \frac{2}{3}$ or $-\frac{2}{3}$

(f) $x = -11$ or 8

(g) $x = -9$ or -8

(h) $x = 0$ or $\frac{7}{2}$

(i) $x = \frac{7}{2}$ or $\frac{3}{4}$

4.

(a) $(7 + w)w = 120$

Length = 15 feet. Width = 8 feet.

(b) $t(t - 1) = 132$

There are 12 teams.

(c) $p(p + 1) = 240$

Pages 15 and 16.

(d) $n(n + 2) = 323$

The integers are 17 and 19.

(e) $n(n + 2) = 224$

The integers are 14 and 16.

(f) $-16t^2 + 24t + 40 = 0$

$2\frac{1}{2}$ seconds.

(g) $-0.1x^2 + 13x - 360 = 0$

The manufacturer breaks even by making either 40 gallons or 90 gallons.