

MIAMI DADE COLLEGE
INTERAMERICAN CAMPUS
DEPARTMENT OF MATHEMATICS
MAT 1033
STUDY GUIDE

FACTORIZATION AND QUADRATIC EQUATION

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Factor completely.

1) $x^2 + 4x - 12$

A) $(x - 6)(x + 1)$

B) $(x + 6)(x - 2)$

C) Prime

D) $(x - 6)(x + 2)$

2) $9k^2 - 25m^2$

A) $(3k - 5m)^2$

B) Prime

C) $(3k + 5m)(3k - 5m)$

D) $(3k + 5m)^2$

Factor as completely as possible. If unfactorable, indicate that the polynomial is prime.

3) $15z^2 + 4z - 4$

A) Prime

B) $(3z + 2)(5z - 2)$

C) $(15z + 2)(z - 2)$

D) $(3z - 2)(5z + 2)$

4) $18y^2 + 81y - 45$

A) $9(2y - 1)(y + 5)$

B) Prime

C) $(18y - 9)(y + 5)$

D) $9(2y + 1)(y - 5)$

5) $2x^3 + 2x^2y - 24xy^2$

A) $(2x^2 + 6xy)(x - 4y)$

B) $2x(x - 3y)(x + 4y)$

C) Prime

D) $2x(x + 3y)(x - 4y)$

E) $(x - 3y)(2x^2 + 8xy)$

Factor as completely as possible. If unfactorable, indicate that it is prime.

6) $x^3 - 512$

A) $(x - 8)^3$

B) $(x + 8)(x^2 - 8x + 64)$

C) $(x - 8)(x^2 + 8x + 64)$

D) Prime

Factor by grouping.

7) $12x^2 - 9x - 8x + 6$

A) $(12x - 2)(x - 3)$

B) $(12x + 2)(x + 3)$

C) $(3x - 2)(4x - 3)$

D) $(3x + 2)(4x + 3)$

Factor out the greatest common factor.

8) $24m^9 - 60m^6 - 72m^3$

A) No common factor (except 1)

B) $12(2m^9 - 5m^6 - 6m^3)$

C) $m^3(24m^6 - 60m^3 - 72)$

D) $12m^3(2m^6 - 5m^3 - 6)$

Factor.

9) $64x^2 + 80x + 25$

A) Prime

B) $(8x + 5)(8x - 5)$

C) $(8x - 5)^2$

D) $(8x + 5)^2$

Solve the problem.

- 10) A rectangle has a length of $x + 3$ and a width of $x - 3$, and has an area of 40 square units. Find the length and width of the rectangle. ($A = LW$)
- A) width = 2 units; length = 20 units
 B) width = 4 units; length = 10 units
 C) width = 1 unit; length = 40 units
 D) width = 5 units; length = 8 units

- 11) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 12 miles, the distance between the cars was 4 miles more than the distance traveled by the car heading east. How far had the eastbound car traveled?
- A) 20 miles
 B) 16 miles
 C) 24 miles
 D) 12 miles

Solve the equation.

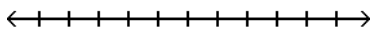
- 12) $36k^2 - 4 = 0$
- A) $\{3, -\frac{1}{3}\}$
 B) $\{3, 0\}$
 C) $\{2, 0\}$
 D) $\{\frac{1}{3}, -\frac{1}{3}\}$

- 13) $45n^2 + 75n = 0$
- A) $\{-\frac{5}{3}, 0\}$
 B) $\{-\frac{5}{3}\}$
 C) $\{-\frac{5}{3}, 75\}$
 D) $\{0\}$

- 14) $15b^2 + 22b - 5 = -13$
- A) $\{\frac{3}{2}, \frac{5}{4}\}$
 B) $\{-\frac{2}{3}, -\frac{4}{5}\}$
 C) $\{-\frac{3}{2}, -\frac{4}{5}\}$
 D) $\{\frac{2}{3}, \frac{4}{5}\}$

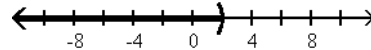
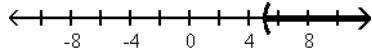
Solve each inequality and graph the solutions.

15) $p^2 - 7p + 10 > 0$



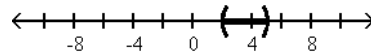
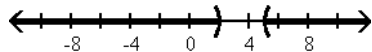
A) $(5, \infty)$

B) $(-\infty, 2)$



C) $(-\infty, 2) \cup (5, \infty)$

D) $(2, 5)$



Factor by grouping.

16) $12a^3 - 10a^2b + 30ab^2 - 25b^3$

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

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

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

D) $(12a^2 + 5b^2)(a - 5b)$

Factor out the greatest common factor.

17) $t(2 - m) + s(2 - m)$

A) $t(2 - m) + s$

B) $(t + s)(2 - m)$

C) $(t - s)(2 - m)$

D) No common factor (except 1)

18) $48x^9y^9 + 12x^4y^4 - 60x^6y^2$

A) $12x^4y^2(4x^5y^7 + 1y^2 - 5x^2)$

C) No common factor (except 1)

B) $12x^4(4x^5y^9 + 1y^4 - 5x^2y^2)$

D) $12(4x^9y^9 + 1x^4y^4 - 5x^6y^2)$

Factor the polynomial completely.

19) $8c^3 + 125$

A) $(8c + 5)(c^2 - 10c + 25)$

C) $(2c - 5)(4c^2 + 10c + 25)$

B) $(2c + 5)(4c^2 + 25)$

D) $(2c + 5)(4c^2 - 10c + 25)$

Factor as completely as possible. If unfactorable, indicate that the polynomial is prime.

20) $-12x^2 - 10x + 12$

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

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

C) $(-6x + 4)(2x + 3)$

D) Prime