

تم تحميل هذا الملف من موقع المناهج الإماراتية



## حل تجميعية أسئلة الوجدتين الثانية والثالثة وفق الهيكل الوزاري منهج ريفيل

موقع المناهج ← المناهج الإماراتية ← الصف الحادي عشر العام ← رياضيات ← الفصل الأول ← حلول ← الملف

تاريخ إضافة الملف على موقع المناهج: 20:03:19 2024-11-10

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منهج انجليزي | ملخصات وتقارير | مذكرات وبنوك | الامتحان النهائي للمدرس

المزيد من مادة  
رياضيات:

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### التواصل الاجتماعي بحسب الصف الحادي عشر العام



صفحة المناهج  
الإماراتية على  
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

### المزيد من الملفات بحسب الصف الحادي عشر العام والمادة رياضيات في الفصل الأول

حل تجميعية أسئلة الوحدة الأولى Quadratic functions وفق الهيكل الوزاري منهج ريفيل

1

تجميعية أسئلة الوحدة الأولى Quadratic functions وفق الهيكل الوزاري منهج ريفيل

2

حل ملزمة تجميعية أسئلة وفق الهيكل الوزاري منهج بريدج

3

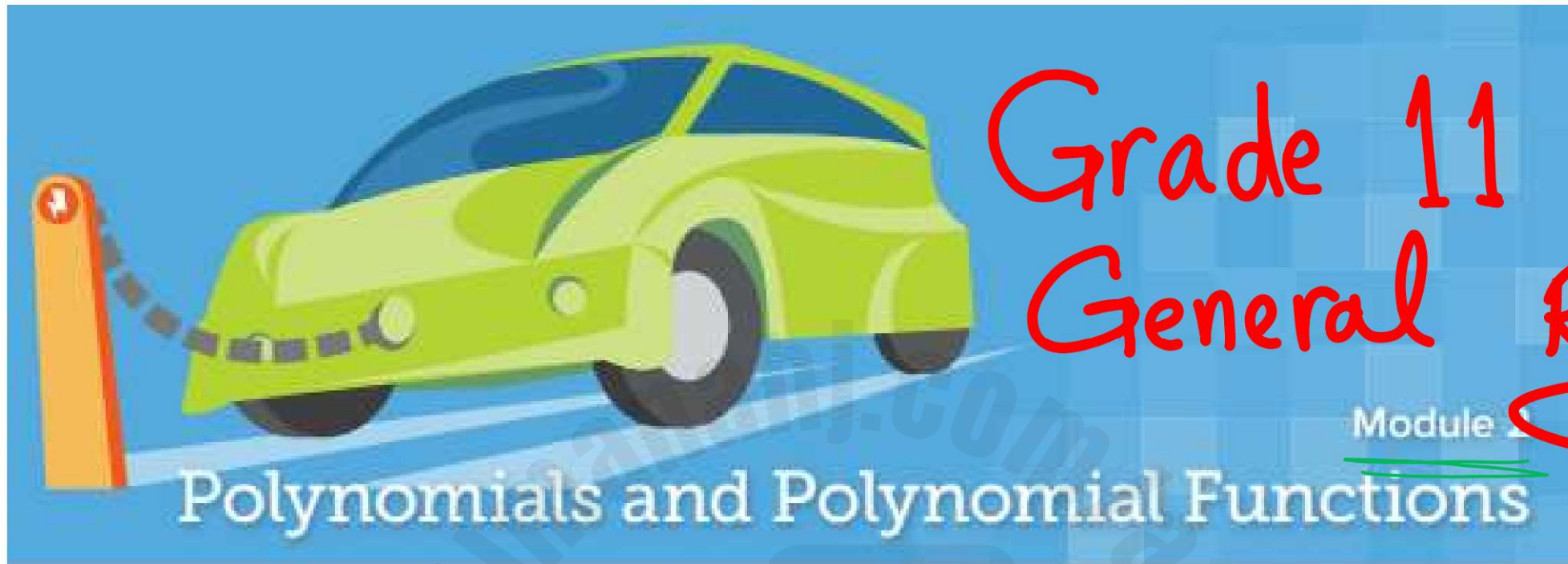
تجميعية أسئلة مراجعة وفق الهيكل الوزاري منهج بريدج

4

المزيد من الملفات بحسب الصف الحادي عشر العام والمادة رياضيات في الفصل الأول

حل ملزمة أسئلة مراجعة وفق الهيكل الوزاري منهج ريفيل

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Part 2

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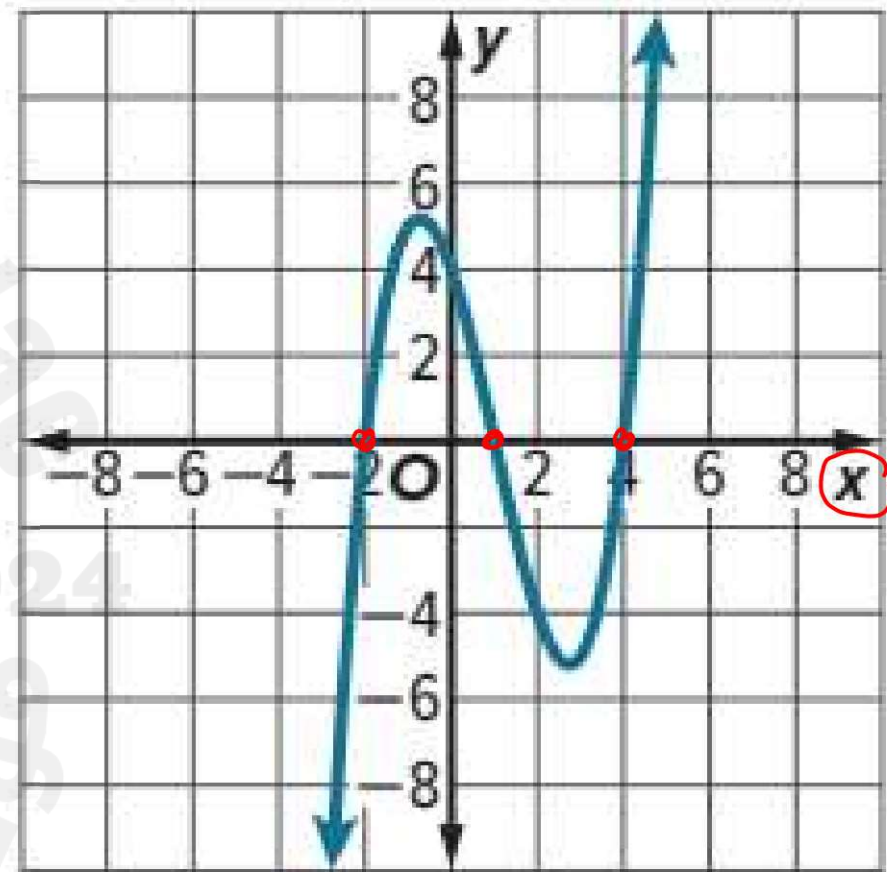
Mr. Ali Abdalla

## Example 5 Zeros of a Polynomial Function

Use the graph to state the number of real zeros of the function.

3 real zeros

The real zeros occur at  $x = \underline{-2}$ ,  $\underline{1}$ , and  $\underline{4}$ , so there are three real zeros.





### Step 2 Estimate the locations of the extrema.

The value of  $f(x)$  at  $x = -2$  is greater than the surrounding points indicating a maximum near  $x = -2$ .

The value of  $f(x)$  at  $x = 1$  is less than the surrounding points indicating a minimum near  $x = 1$ .

You can use a graphing calculator to find the extrema of a function and confirm your estimates.

[Go Online](#) You can complete an Extra Example online.

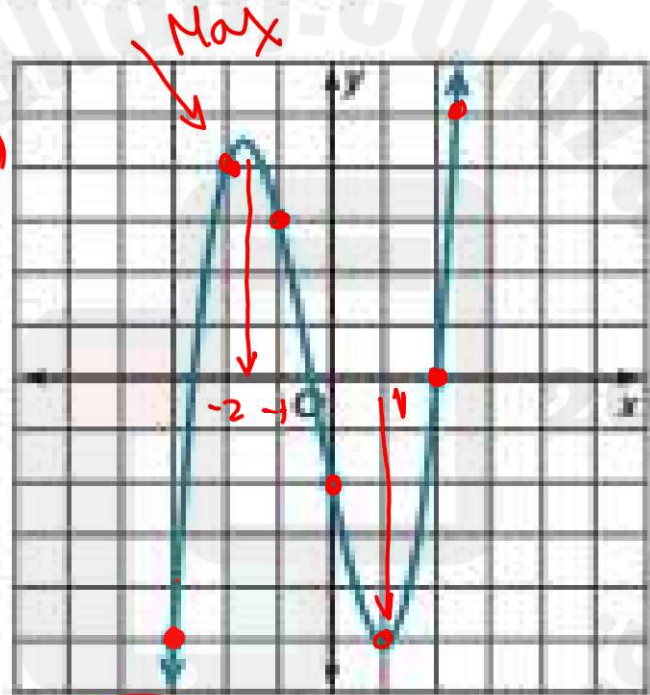
$$x = 0 \quad f(0) = -2$$
$$x = -1$$

## Example 2 Identify Extrema

Use a table to graph  $f(x) = x^3 + x^2 - 5x - 2$ . Estimate the  $x$ -coordinates at which the relative maxima and relative minima occur.

Step 1 Make a table of values and graph the function.

$x$	$f(x)$
-4	-30
-3	-5
-2	4
-1	3
0	-2
1	-5
2	0
3	19



$-1.6$

$x = 1$

**Simplify.**

$$30. 5xy(2x - y) + 6y^2(x^2 + 6)$$

$$= 5xy(2x) + 5xy(-y) + 6y^2(x^2) + 6y^2(6)$$

$$= 10x^2y - 5xy^2 + 6x^2y^2 + 36y^2$$

$\frac{1}{4}(8)$   
 $\frac{1}{4} \times 12$   
 $\frac{1}{3}(16)$

$$32. \frac{1}{4}g^2(8g + 12h - 16gh^2)$$

$$= 2g^3 + 3g^2h - 4g^3h^2$$

$x=2$   
 $y=3$   
 $\Rightarrow 198$

**Mixed Exercises**

$$31. 3ab(4a - 5b) + 4b^2(2a^2 + 1)$$

$$= 3ab(4a) + 3ab(-5b) + 4b^2(2a^2) + 4b^2(1)$$

$$= 12a^2b - 15ab^2 + 8a^2b^2 + 4b^2$$

$$12a^2b - 8a^2b^2 + 15ab^2 + 4b^2$$

$$12a^2b + 8a^2b^2 - 5ab^2 + 4b^2$$

$$12a^2b + 8a^2b^2 - 15ab^2 + 4b^2$$

$$12a^2b + 8a^2b^2 - 15ab^2 - 4b^2$$

$\frac{1}{3}(6)$   
 $\frac{1}{3}(9)$

$$33. \frac{1}{3}n(6n - 9p + 18np^4)$$

$$= 2n^4 - 3n^3p + 6n^4p^4$$



Simplify.

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

## Mixed Exercises

34.  $(g^3 - h)(g^3 + h)$

$$= g^6 - h^2$$

35.  $n^2(2n^3 + 4) - 7(2n^3 + 4)$   
 $= 2n^5 + 4n^2 - 14n^3 - 28$

$$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

$$(4n)^3 - 3(4n)^2(5) + 3(4n)(5)^2 - (5)^3$$

36.  $(2x - 2y)^3 = 64n^3 - 240n^2 + 300n - 125$

X  $8x^3 + 24x^2y - 24xy^2 - 8y^3$

$8x^3 - 14x^2y + 24xy^2 - 8y^3$

✓  $8x^3 - 24x^2y + 24xy^2 - 8y^3$

$8x^3 + 24x^2y - 24xy^2 + 8y^3$

35.  $(n^2 - 7)(2n^3 + 4)$

$x = 2$

$-60$

$2n^5 - 14n^3 + 14n^2 - 28$

$2n^5 - 14n^3 - 4n^2 - 28$

✓  $2n^5 - 14n^3 + 4n^2 - 28$  ✓

$2n^5 - 4n^3 + 4n^2 - 28$

37.  $(4n - 5)^3$

$(4n-5)(4n-5)(4n-5)$

$= (4n-5)(16n^2 - 20n - 20n + 25)$

$= (4n-5)(16n^2 - 40n + 25)$

$= 64n^3 - 160n^2 + 100n - 80n^2 + 200n - 125$

$= 64n^3 - 240n^2 + 300n - 125$

Simplify.

$$\begin{aligned} 38. (3z - 2)^3 &= (3z)^3 - 3(3z)^2(2) + 3(3z)(2)^2 - (2)^3 \\ &= 27z^3 - 54z^2 + 36z - 8 \end{aligned}$$

$$27z^3 - 54z^2 - 36z - 8$$

$$27z^3 - 54z^2 + 36z + 8$$

$$27z^3 - 54z^2 + 36z - 8$$

$$27z^3 + 54z^2 + 36z + 8$$

## Mixed Exercises

$$\begin{aligned} 39. \frac{1}{4}(16x - 12y) + \frac{1}{3}(9x + 3y) &= \frac{1}{4}(16x) + \frac{1}{4}(-12y) + \frac{1}{3}(9x) + \frac{1}{3}(3y) \\ &= 4x - 3y + 3x + y \\ &= (4x + 3x) + (-3y + y) \\ &= 7x - 2y \end{aligned}$$





Simplify using synthetic division.

$$v-4=0$$

$$\boxed{v=4} \times$$

$$v=6$$

$$\boxed{38}$$

11.  $(3v^2 - 7v - 10)(v - 4)^{-1}$

$$(3v^2 - 7v - 10) \div (v - 4)$$

4	$3v^2$	$-7$	$-10$
	$3v$	$12$	$20$
	$3v$	$5$	$10$

$$3v + 5 + \frac{10}{v-4}$$

$$3v - 5 + \frac{10}{v-4}$$

$$3v + 5 - \frac{10}{v-4}$$

$$3v + 5 + \frac{10}{v-4}$$

$$3v - 5 - \frac{10}{v-4}$$

$$t=6$$

$$\boxed{355}$$

Examples 4 and 5

12.  $(3t^4 + 4t^3 - 32t^2 - 5t - 20)(t + 4)^{-1}$

-4	$3t^4$	$4$	$-32$	$-5$	$-20$
	$3t^3$	$-12$	$32$	$0$	$20$
	$3t^3$	$-8$	$0$	$-5$	$10$

$$3t^3 - 8t^2 - 5$$

$$3t^3 - 8t^2 + 5$$

$$3t^3 + 8t^2 - 5$$

$$3t^3 + 8t^2 + 5$$

$$3t^3 - 8t^2 - 5$$

# Simplify using synthetic division.

# Examples 4 and 5

13.  $\frac{y^3 + 6}{y + 2}$

$$\begin{array}{r|rrrr}
 -2 & 1 & 0 & 0 & 6 \\
 & \textcircled{1} & -2 & 4 & -2 \\
 \hline
 & & -2 & 4 & -2
 \end{array}$$

$$y^2 - 2y + 4 - \frac{2}{y+2}$$

$$y^2 - 2y + 4 + \frac{2}{y+2}$$

$$y^2 + 2y + 4 - \frac{2}{y+2}$$

$$y^2 + 2y + 4 + \frac{2}{y+2}$$

$$y^2 - 2y + 4 - \frac{2}{y+2}$$

14.  $\frac{2x^3 - x^2 - 18x + 32}{2x - 6} \div 2$

$$\begin{array}{r|rrrr}
 3 & 1 & -\frac{1}{2} & -9 & 16 \\
 & \textcircled{1} & 3 & \frac{15}{2} & -\frac{9}{2} \\
 \hline
 & & \frac{5}{2} & -\frac{3}{2} & \frac{23}{2}
 \end{array}$$

$$x^2 + \frac{5}{2}x + \frac{3}{2} + \frac{23}{2x-6}$$

$$x^2 + \frac{5}{2}x - \frac{3}{2} + \frac{23/2 \times 2}{x-3 \times 2} = x^2 + \frac{5}{2}x - \frac{3}{2} - \frac{23}{2x-6}$$

$$x^2 + \frac{5}{2}x - \frac{3}{2} + \frac{23}{2x-6} \quad \left( x^2 + \frac{5}{2}x - \frac{3}{2} + \frac{23}{2x-6} \right)$$

$$x^2 - \frac{5}{2}x - \frac{3}{2} + \frac{23}{2x-6}$$

## Simplify using synthetic division.

## Examples 4 and 5

15.  $(4p^3 - p^2 + 2p) \div (3p - 1)$

تدریب

$$\frac{4}{3}p^2 + \frac{1}{9}p + \frac{19}{27} - \frac{19}{27(3p-1)}$$

$$\frac{4}{3}p^2 + \frac{1}{9}p - \frac{19}{27} + \frac{19}{27(3p-1)}$$

$$\frac{4}{3}p^2 + \frac{1}{9}p + \frac{19}{27} + \frac{19}{27(3p-1)}$$

$$\frac{4}{3}p^2 + \frac{1}{9}p + \frac{19}{27} + \frac{19}{(3p-1)}$$

16.  $(3c^4 + 6c^3 - 2c + 4)(c + 2)^{-1}$

تدریب

$$3c^3 - 2 + \frac{3}{c+2}$$

$$3c^3 - 2 - \frac{8}{c+2}$$

$$3c^3 - 2 - \frac{3}{c+2}$$

$$3c^3 - 2 + \frac{8}{c+2}$$



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Module 3

## Polynomial Equations



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$x - 5$

112

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

23.  $x^3 - 3x + 2$ ,  $x + 2$

$$\begin{array}{r|rrrr}
 -2 & 1 & 0 & -3 & 2 \\
 & & -2 & 4 & -2 \\
 \hline
 & 1 & -2 & 1 & 0
 \end{array}$$

$(x^2 - 2x + 1)(x + 2)$

$= (x - 1)(x - 1)(x + 2)$

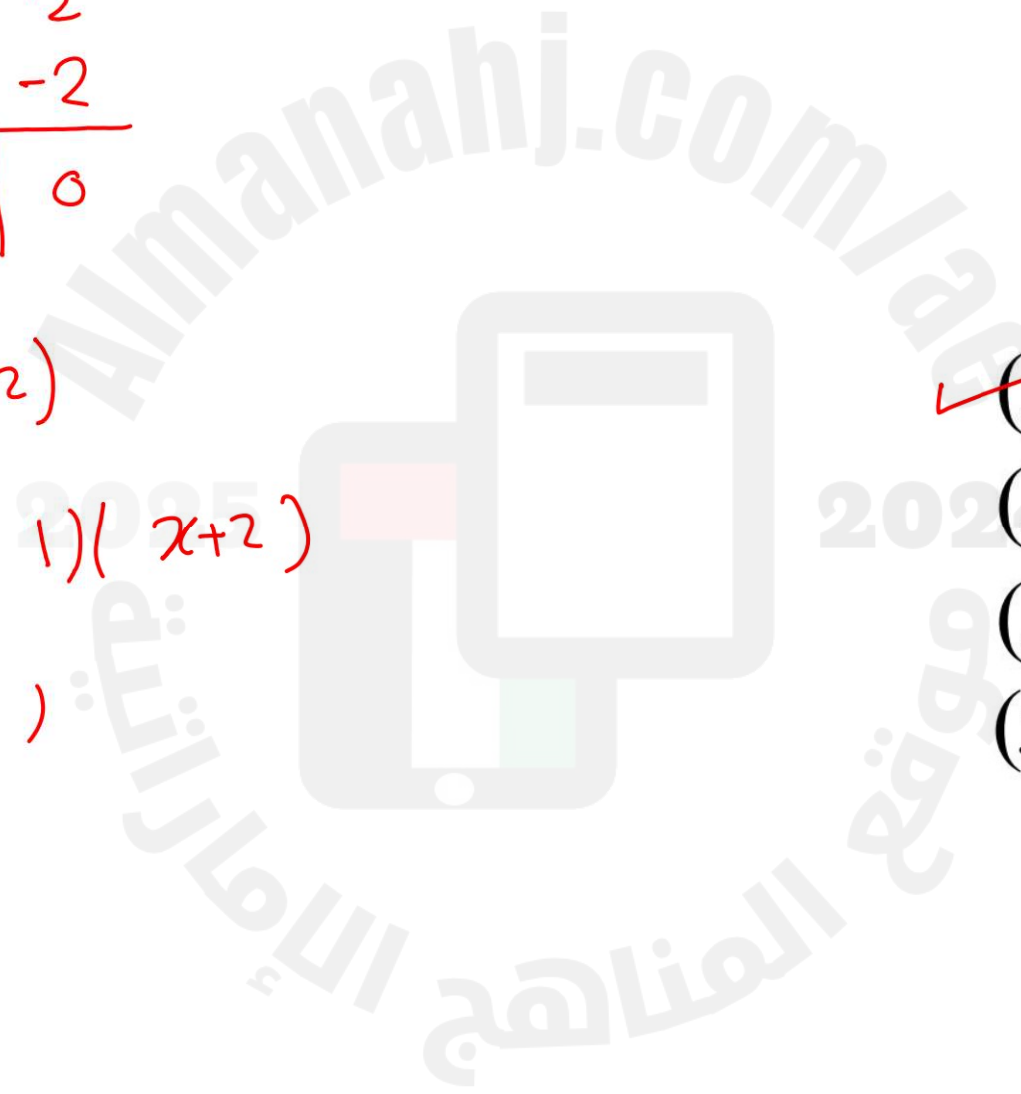
$= (x - 1)^2(x + 2)$

~~$(x + 2)(x - 1)^2$~~

$(x + 2)(x + 1)^2$

$(x + 2)(x - 1)(x + 1)$

$(x + 2)(x - 2)(x - 1)$



$x = 5$    

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

24.  $x^4 + 2x^3 - 8x - 16$ ;  $x + 2$

$$\begin{array}{r|rrrrr}
 -2 & 1 & 2 & 0 & -8 & -16 \\
 & & -2 & 0 & 0 & 16 \\
 \hline
 & 1 & 0 & 0 & -8 & 0
 \end{array}$$

$\sqrt[3]{8}$

$(x^3 - 8)(x + 2)$

$= (x - 2)(x^2 + 2x + 4)(x + 2)$

$= (x - 2)(x + 2)(x^2 + 2x + 4)$

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



### Example 3

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

25.  $x^3 - x^2 - 10x - 8; x + 2$

تجربة



- $(x + 2)(x + 4)(x + 1)$
- $(x + 2)(x - 4)(x - 1)$
- $(x - 2)(x + 4)(x - 1)$
- $(x + 2)(x + 4)(x - 1)$

Example 3

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

26.  $x^3 - x^2 - 5x - 3; x - 3$

$$\begin{array}{r|rrrr}
 3 & 1 & -1 & -5 & -3 \\
 & & 3 & 6 & 3 \\
 \hline
 & 1 & 2 & +1 & 0
 \end{array}$$

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

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

$$\begin{array}{r}
 991ES \\
 \hline
 x^3 \\
 \hline
 991Ex \\
 \hline
 x^4
 \end{array}$$

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

S

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

27.  $2x^3 + 17x^2 + 23x - 42$ ;  $x - 1$

$$\begin{array}{r|rrrr}
 1 & 2x^3 & 17 & 23 & -42 \\
 & & 2 & 19 & 42 \\
 \hline
 & 2 & 19 & 42 & 0
 \end{array}$$

$x = 1$

$(x - 1)$

$x = -\frac{7}{2} \Rightarrow 2x = -7 \rightarrow (2x + 7)$

$x = -6 \Rightarrow (x + 6)$

$(x - 1)(2x^2 + 19x + 42)$   
 $(x - 1)(x + 6)(2x + 7)$

$(x - 1)(x + 6)(2x - 7)$

$(x - 1)(x - 6)(2x + 7)$

$(x - 1)(x - 6)(2x - 7)$

$(x - 1)(x + 6)(2x + 7)$



### Example 3

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

28.  $2x^3 + 7x^2 - 53x - 28; x - 4$

*سج*

$$(x - 4)(x + 7)(2x - 1)$$

$$(x - 4)(x - 7)(2x + 1)$$

$$(x - 4)(x + 7)(2x - 1)$$

$$(x - 4)(x + 7)(2x + 1)$$

⑤ 912

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

29.  $x^4 + 2x^3 + 2x^2 - 2x - 3; (x - 1)$

$x = 1$       $(x - 1)$   
 $x = -1$      $(x + 1)$

$$\begin{array}{r|rrrr}
 -1 & 1 & 2 & 2 & -2 & -3 \\
 & & -1 & -2 & -3 & \\
 \hline
 & 1 & 1 & 0 & -5 & -6
 \end{array}$$

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

$$\begin{array}{r|rrrrr}
 +1 & 1 & 2 & 2 & -2 & -3 \\
 & & 1 & 3 & 5 & 3 \\
 \hline
 & 1 & 3 & 5 & 3 & 0
 \end{array}$$

$(x^3 + 3x^2 + 5x + 3)(x - 1)$

- ✓  $(x - 1)(x + 1)(x^2 + 2x + 3)$
- ✗  $(x - 1)(x - 1)(x^2 + 2x + 3)$
- $(x - 1)(x + 1)(x^2 - 2x + 3)$
- $(x - 1)(x + 1)(x^2 + 2x - 3)$

### Example 3

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

30.  $x^3 + 2x^2 - x - 2; x + 2$

991ES  
Mode [5] [4]

991EX  
Menu [(-)] [2] [3]

- (x - 7)(x + 1)(3x + 1)
- (x - 7)(x + 1)(3x - 1)
- (x - 7)(x - 1)(3x - 1)
- (x - 7)(x - 1)(3x + 1)

$x = -\frac{1}{3}$   
 $3x = -1$   
 $(3x + 1)$



Examples 1-3  
 $x=5$   
 $y=3$

$\sqrt[3]{64}$

40135

Factor completely. If the polynomial is not factorable, write *prime*.

1.  $8c^3 - 27d^3$   
 $= (2c - 3d)(4c^2 + 6cd + 9d^2)$

*Handwritten notes:*  
 - A red arrow points from  $8c^3$  to  $2c$  and from  $27d^3$  to  $3d$ .  
 - The text "a group b" is written above the second factor.  
 - Blue arrows point from the first and second factors down to the numbers 2 and 3 respectively.

2.  $64x^4 + xy^3$   
 $= x(64x^3 + y^3)$   
 $= x(4x + y)(16x^2 - 4xy + y^2)$

*Handwritten notes:*  
 - The number 4 in the exponent of  $x$  is circled.  
 - A red arrow points from  $x$  to the first factor in the second step.

$(4x + y)(16x^2 - 4xy + y^2)$   
 $x(4x - y)(16x^2 + 4xy + y^2)$   
 $x(4x + y)(16x^2 - 4xy - y^2)$   
 $x(4x + y)(16x^2 - 4xy + y^2)$

3.  $a^8 - a^2b^6$   
 $= a^2(a^6 - b^6)$

$\sqrt[3]{8} = 2$   
 $\sqrt[3]{27} = 3$

$= a^2[(a^3)^2 - (b^3)^2]$   
 $= a^2(a^3 - b^3)(a^3 + b^3)$   
 $= a^2[(a)^3 - (b)^3][(a)^3 + (b)^3]$   
 $= a^2(a - b)[(a)^2 + a(b) + (b)^2](a + b)[(a)^2 - a(b) + (b)^2]$   
 $= a^2(a - b)(a^2 + ab + b^2)(a + b)(a^2 - ab + b^2)$

*Handwritten notes:*  
 - The expression  $a^2(a^6 - b^6)$  is written above the first step.  
 - The expression  $a^2(a^3 + b^3)(a^3 - b^3)$  is written above the second step.  
 - Red checkmarks are placed under the final two factors.

4.  $x^6y^3 + y^9$   
 $= y^3(x^6 + y^6)$

$\sqrt[3]{x^6} = x^2$

$= y^3[(x^2)^3 + (y^2)^3]$   
 $= y^3(x^2 + y^2)[(x^2)^2 - x^2(y^2) + (y^2)^2]$   
 $= y^3(x^2 + y^2)(x^4 - x^2y^2 + y^4)$

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

*Handwritten notes:*  
 - A red arrow points from  $y^3$  to the first factor in the final expression.  
 - A red arrow points from  $x^2 + y^2$  to the second factor.

Factor completely. If the polynomial is not factorable, write *prime*.

$$5. 18x^{\textcircled{6}} + \textcircled{5}y^6 \quad \sqrt[3]{18}$$

the polynomial  $18x^6 + 5y^6$  is prime.

$$6. w^3 - 2y^3$$

$$\sqrt{w^3} = w \quad \sqrt[3]{y^3} = y$$

$$\boxed{\sqrt[3]{2}} \times$$

the polynomial  $w^3 - 2y^3$  is prime.

Factor completely. If the polynomial is not factorable, write *prime*.

Examples 1-3

$$7. \quad gx^2 - 3hx^2 - 6fy^2 - gy^2 + 6fx^2 + 3hy^2$$

$$= (gx^2 - 3hx^2 + 6fx^2) + (-6fy^2 - gy^2 + 3hy^2)$$

$$= x^2(g - 3h + 6f) - y^2(g + 6f - 3h)$$

$$= (x^2 - y^2)(g - 3h + 6f)$$

$$= (x + y)(x - y)(g - 3h + 6f)$$

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

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

$$\checkmark (x + y)(x - y)(6f + g - 3h)$$

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



Factor completely. If the polynomial is not factorable, write *prime*.

$$8. \quad 12ax^2 - 20cy^2 - 18bx^2 - 10ay^2 + 15by^2 + 24cx^2$$

$$\begin{aligned}
 & \quad \quad \quad 6 \quad \quad \quad \quad \quad \quad -5 \\
 & = (\underline{12ax^2} - \underline{18bx^2} + \underline{24cx^2}) + (-\underline{10ay^2} + \underline{15by^2} - \underline{20cy^2}) \\
 & = \underline{6x^2}(2a - 3b + 4c) - \underline{5y^2}(2a - 3b + 4c) \\
 & = (6x^2 - 5y^2)(\underline{2a - 3b + 4c})
 \end{aligned}$$

2025

2024

موقع المناهج الإلكترونية

Factor completely. If the polynomial is not factorable, write *prime*.

$$9. \quad a^3x^2 - 16a^3x + 64a^3 - b^3x^2 + 16b^3x - 64b^3$$

$$(a^3x^2 - 16a^3x + 64a^3) + (-b^3x^2 + 16b^3x - 64b^3)$$

$$= a^3(x^2 - 16x + 64) - b^3(x^2 - 16x + 64)$$

$$= (a^3 - b^3)(x^2 - 16x + 64)$$

$$= (a - b)(a^2 + ab + b^2)(x - 8)^2$$

$$(a - b)(a^2 + b^2)(x - 8)^2$$

$$(a - b)(a^2 + ab - b^2)(x - 8)^2$$

$$(a - b)(a^2 - ab + b^2)(x - 8)^2$$

$$\checkmark (a - b)(a^2 + ab + b^2)(x - 8)^2$$

Factor completely. If the polynomial is not factorable, write *prime*.

$$10. \quad 8x^5 - 25y^3 + 80x^4 - x^2y^3 + 200x^3 - 10xy^3$$

$$= (8x^5 + 80x^4 + 200x^3) + (-x^2y^3 - 10xy^3 - 25y^3)$$

$$= 8x^3(x^2 + 10x + 25) - y^3(x^2 + 10x + 25)$$

$$= (8x^3 - y^3)(x^2 + 10x + 25)$$

$$= (2x - y)(4x^2 + 2xy + y^2)(x^2 + 10x + 25)$$

$$= (2x - y)(4x^2 + 2xy + y^2)(x + 5)^2$$

$(x + \cdot$

$$\boxed{x = -5}$$

$$\underline{\underline{(x+5)^2}}$$