

Common mistakes...

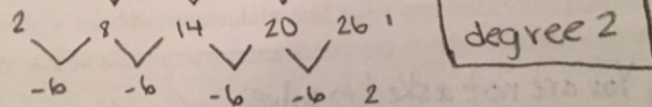
- Find minimum degree of a polynomial from a table.
Adding and subtracting - ONLY SUBTRACT IN ONE DIRECTION.
- Write polynomials from graphs with coefficient.
1) Using (0,0) to find a. 2) Forgetting (0,0) as x-intercept.
- Expand polynomial expressions.
1) Adding UNLIKE terms 2) $(x-9)^2 = (x-9)(x-9)$ NOT $x^2 - 9^2$
- Factor polynomial expressions, completely.
1) Solving expressions 2) Forgetting common factors in expression.
- Solve for polynomial solutions – real & nonreal values.
 - Factoring
 - Taking square roots**1) Undoing the wrong order of operations**
2) Forgetting common factors

Version 1

Find minimum degree of a polynomial from a table.

polynomial represented in the table below.

x	1	2	3	4	5	6
y	16	14	6	-8	-28	-54

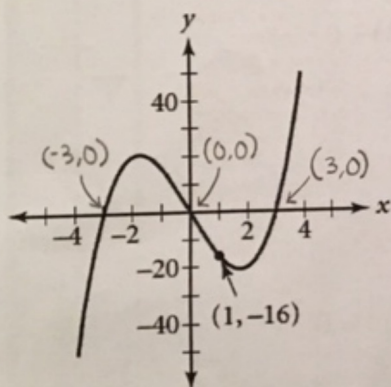


Version 1

2)

- Find the x -intercepts of the graph below and write the equation in **factored** form.
- Use the additional point to solve for the stretch/shrink factor of the graph.
- Rewrite** the equation in factored form, including the stretch/shrink factor of the graph.

$$y = a(x - r_1)(x - r_2)(x - r_3) \cdots (x - r_n)$$



$$y = a(x+3)(x)(x-3)$$

$$-16 = a(1+3)(1)(1-3)$$

$$-16 = a(4)(1)(-2)$$

$$\frac{-16}{-8} = \frac{-8a}{-8}$$

$$a = 2$$

$$y = 2(x+3)(x)(x-3)$$

Version 1

3) Expand each expression.

a) $2x(3x-2)$

	$3x$	-2
$2x$	$6x^2$	$-4x$

b) $(x+4)(3x-7)$

	x	4
$3x$	$3x^2$	$12x$
-7	$-7x$	-28

c) $(x-8)^2$

	x	-8
x	x^2	$-8x$
-8	$-8x$	64

d) $(3-i)(4+i)$ [Challenge]

$(3 - \sqrt{-1})(4 + \sqrt{-1})$

	4	i
3	12	$3i$
$-i$	$4\sqrt{-1}$	$-i^2$

$3i - 4i - i^2 + 12$

$3i - 4i + 1 + 12$

$-i + 13$

Yes!

Version 1

4) Factor completely.

a) $x^2 + 12x + 36$

$$(x+6)(x+6)$$

c) $x^2 - 9$

$$(x+3)(x-3)$$

b) $\frac{-2x^2 + 14x - 20}{2}$

$$\begin{array}{r} x \\ -5 \cancel{10} -2 \\ -7 \end{array}$$

$$2(-x^2 + 7x - 10) \rightarrow -2(x^2 - 7x + 10)$$

$$-1 \quad \boxed{-2(x-5)(x-2)}$$

d) $\frac{(x-2)^2}{x-2} + 3 \frac{(x-2)}{x-2}$

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

Version 1

5) Solve each quadratic equation.

a) $x^2 = 64$

$$x = \pm 8$$

c) $(6x-4)(3x-2) = 0$

$$6x-4=0$$

$$x = \frac{2}{3}$$

$$x = \frac{2}{3}$$

$$3x-2=0$$

$$3x=2$$

$$x = \frac{2}{3}$$

e) $(x+4)^2 = 9$

$$x+4 = \pm \sqrt{9}$$

$$x+4 = \pm 3$$

$$x = -4 \pm 3$$

b) $(x-7)(x+2) = 0$

$$x = 7, -2$$

$$(7-7)(7+2) = 0(9) = 0 \checkmark$$

$$(2+7)(-2+2) = 9(0) = 0 \checkmark$$

d) $2x^3 + 24x + 16x^2 = 0$

$$2x(x^2 + 8x + 12) = 0$$

$$2x(x+2)(x+6) = 0$$

$$x = 0, -2, -6$$

Version 2

x	1	2	3	4	5	6
y	16	14	6	-8	-28	-54

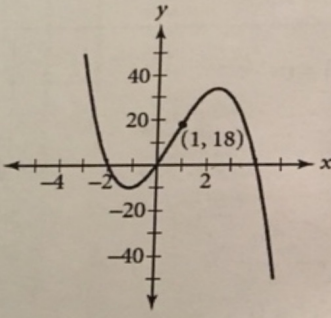
2 8 14 20 26
6 6 6 6

Degree 2

Version 2

2)
a) Find the x-intercepts of the graph below and write the equation in **factored form**.
b) Use the additional point to solve for the stretch/shrink factor of the graph.
c) **Rewrite** the equation in factored form, including the stretch/shrink factor of the graph.

$y = a(x-r_1)(x-r_2)(x-r_3)\cdots(x-r_n)^a$ x-intercepts = -2, 0, 4
y-int = (0,0) other point = (1, 18)



b) $y = a(x+2)(x-0)(x-4)$
 $18 = a(1+2)(1-0)(1-4)$
 $18 = a(3)(1)(-3)$
 $\frac{18}{-9} = \frac{a(-9)}{-9}$
 $-2 = a$

c) $y = -2(x+2)(x)(x-4)$

Version 2

3) Expand each expression.

a) $3x(5x-1)$

$$15x^2 - 3x$$

c) $(x-9)^2$
 $(x-9)(x-9)$

$$x^2 - 9x - 9x + 81$$

$$x^2 - 18x + 81$$

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

$$4x^2 - 8x + 7x - 14$$

$$4x^2 - x - 14$$

d) $(5+i)(7-i)$ [Challenge]

$$35 - 5i + 7i - 1i^2$$

$$35 + 2i + 1$$

$$36 + 2i = \boxed{36 + 2i}$$

$$36 + 2\sqrt{-1} + 1$$

$$36 + \sqrt{4} \cdot \sqrt{-1}$$

$$36 + \sqrt{3}$$

$$i^2 = -1$$

Version 2

3) Expand each expression.

a) $3x(5x-1)$

$$15x^2 - 3x$$

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

$$4x^2 - 8x + 7x - 14$$

$$4x^2 - x - 14$$

c) $(x-9)^2$

$$x^2 - 18x + 81$$

d) $(5+i)(7-i)$ [Challenge]

$$35 - 5i + 7i + i^2$$

$$35 + 2i - (-1)$$

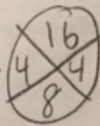
$$2i + 36$$

Version 2

4) Factor completely.

a) $x^2 + 8x + 16$

$(x+4)(x+4)$



b) $\frac{-3x^2 + 15x - 12}{-3 -3 -3}$

$x^2 - 5x + 4$

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



c) $x^2 - 4$

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



d) $\frac{4(x-3) + (x-3)^2}{x-3 \quad x-3}$

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

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

Version 2

5) Solve each quadratic equation.

a) $x^2 = 64$
 $\sqrt{x^2} = \sqrt{64}$
 $x = \pm 8$

b) $(x-7)(x+2) = 0$
 $x-7=0$ $x+2=0$
 $x=7$ $x=-2$
 $x = -2$
 $x = 7$

c) $(6x-4)(3x-2) = 0$ $x = \frac{2}{3}$
 $6x-4=0$ $3x-2=0$
 $6x=4$ $3x=2$
 $x = \frac{4}{6}$ $x = \frac{2}{3}$
 $x = \frac{2}{3}$

d) $2x^3 + 24x + 16x^2 = 0$
 $2x^3 + 16x^2 + 24x = 0$
 $2x(x^2 + 8x + 12) = 0$
 $2x(x+6)(x+2) = 0$
 $2x=0$ $x+6=0$ $x+2=0$
 $x=0$ $x=-6$ $x=-2$
 $x = 0$
 $x = -6$
 $x = -2$

e) $(x+4)^2 = -9$
 $\sqrt{(x+4)^2} = \sqrt{-9}$
 $x+4 = \sqrt{9} \cdot \sqrt{-1}$
 $x+4 = \pm 3i$
 $x = \pm 3i - 4$

