

Name _____

Date _____

Advanced Algebra

Unit 5 Polynomials: Assignment #10

Combine the following polynomials

1) $(5x^3 + 11x^2 + 26x + 26) - (5x^2 - 40x + 6)$
 $-5x^2 + 40x - 6$

2) $(-18a + 3a^3 + 9 - 36a^2) - (-3a^2 + 3a)$
 $3a^3 - 36a^2 - 18a + 9 + 3a^2 - 3a$

3) $(a-10)(a^3 + 5a^2 - 6)$
 $a^4 + 5a^3 - 6a - 10a^3 - 50a^2 + 60$

4) $(v+4)(3v+11)(6v-18)$ Hint: do a box for $(v+4)$ and $(3v+11)$ and then make a new 3 by 2 box

$$\boxed{18v^3 + 84v^2 - 150v - 792}$$

$$\boxed{5x^3 + 6x^2 + 66x + 20}$$

$$\boxed{3a^3 - 33a^2 - 21a + 9}$$

$$\boxed{a^4 - 5a^3 - 50a^2 - 6a + 60}$$

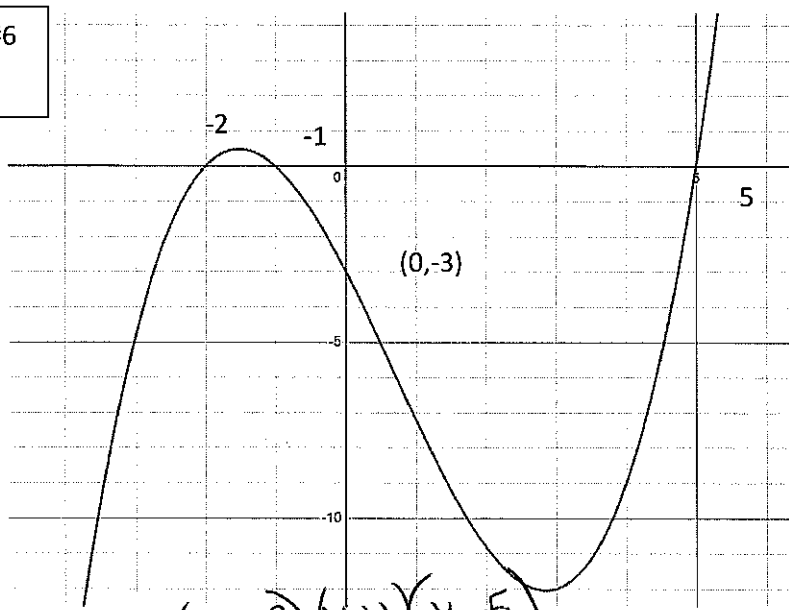
	$3v^2$	$23v$	44
$6v$	$18v^3$	$138v^2$	$264v$
-18	$-54v^2$	$-414v$	-792

5) $3(k^3 + 2k^2 - 4)(k+4)(k+5)$ Hint: do a box for $(k+4)(k+5)$ and then make a new 3 by 3 box

$$3k^5 + 33k^4 + 114k^3 + 108k^2 - 108k - 240$$

Write the factored form equation of the following graphs. You need to solve for the "a" value

Problem #6



$$y = a(x+2)(x+1)(x-5)$$

$$-3 = -10a$$

$$\frac{3}{10} = a$$

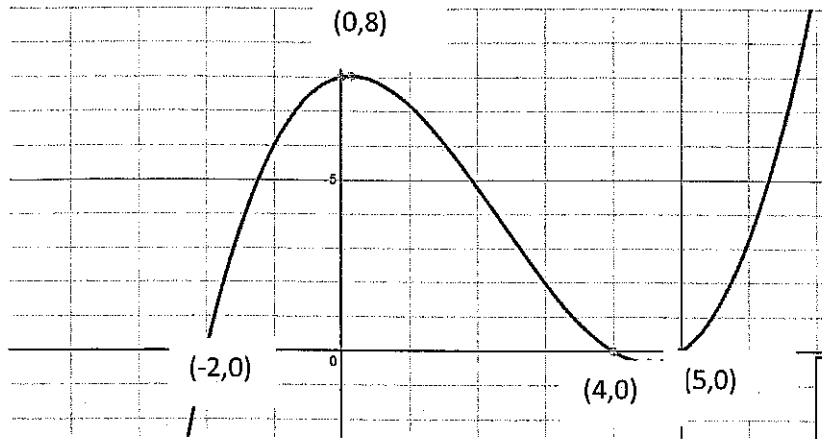
⑤

	$3k^3$	$6k^2$	-12
k^2	$3k^5$	$6k^4$	$-12k^2$
$9k$	$27k^4$	$54k^3$	$-108k$
20	$60k^3$	$120k^2$	-240

Final Equation for #6

$$y = \frac{3}{10}(x+2)(x+1)(x-5)$$

Problem #7



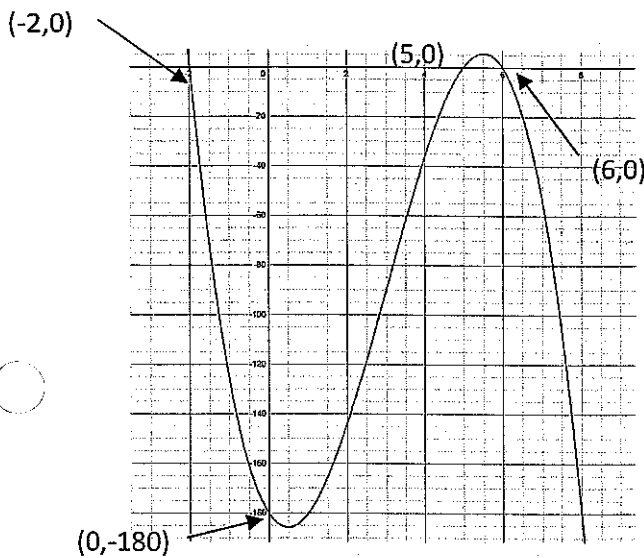
$$y = a(x+2)(x-4)(x-5)$$

$$8 = 40a$$

$$\frac{1}{5} = a$$

Final Equation for #7

$$y = \frac{1}{5}(x+2)(x-4)(x-5)$$



$$y = a(x+2)(x-5)(x-6)$$

$$-180 = 60a$$

$$-3 = a$$

Final Equation for #8

$$y = -3(x+2)(x-5)(x-6)$$

Transform the following into General Form

9) $y = 3(x-1)(x+3)(x+8)$

Final answer for #9

$$y = 3x^3 + 30x^2 + 39x - 72$$

10) $y = -2(x+2)(x+5)(x-6)$

$$-2(x^3 + x^2 - 32x - 60)$$

	x^2	$7x$	10
x	x^3	$7x^2$	$10x$
-6	$-6x^2$	$-42x$	-60

Final answer for #10

$$y = -2x^3 - 2x^2 + 64x + 120$$

11) $y = 5(x-2)(x-3)(x+5)$

$$5(x^3 - 19x + 30)$$

	x^2	$-5x$	6
x	x^3	$-5x^2$	$6x$
5	$5x^2$	$-25x$	30

Final answer for #11

$$y = 5x^3 - 95x + 150$$

12) $y = -.5(2x+4)(x-6)(x+2)$

$$y = -x^3 + 2x^2 + 20x + 24$$

Final Answer

$$2x \begin{array}{l} x^2 - 4x - 12 \\ 2x^3 - 8x^2 - 24x \\ 4x^2 - 16x - 48 \end{array}$$

$$y = 2x^3 - 4x^2 - 40x - 48$$

- .5 (

13) $y = \frac{1}{4}(4x+8)(2x-3)(x+5)$

$$y = 2x^3 + 11x^2 - x - 30$$

Final Answer

$$4x \begin{array}{l} 2x^2 + 7x - 15 \\ 8x^3 + 28x^2 - 60x \\ 8 \quad 16x^2 + 56x - 120 \end{array}$$

$$y = 8x^3 + 44x^2 - 4x - 120$$

Complete the square for the following problems to write the Quadratic in vertex form. Then quickly state the roots.

14) $y = x^2 + 20x + 94$

$$y = (x^2 + 20x + 100) - 100 + 94$$

$$y = (x+10)^2 - 6$$

$$x = -10 \pm \sqrt{6}$$

15) $y = x^2 - 7x + 16$

$$y = (x^2 - 7x + 12.25) - 12.25 + 16$$

$$y = (x - 3.5)^2 + 3.75$$

No Real Roots

#16 Use $x = \frac{-b}{2a}$ to find the vertex since there is a leading coefficient

16) $y = 6x^2 - 24x + 147$

$$\frac{24}{12} \rightarrow (2, 123)$$

$$y = 6(x-2)^2 + 123$$

~~$x = 2 \pm \sqrt{123}$~~
No Real Roots

17) $y = 5x^2 + 8x + 0$

$$-\frac{8}{10}$$

$$(-.8, -3.2)$$

$$y = 5(x + .8)^2 - 3.2$$

$$x = -.8 \pm \sqrt{\frac{3.2}{5}}$$

#17 Use $x = \frac{-b}{2a}$ to find the vertex since there is a leading coefficient