

Algebra 2  
Chapter 5 - Polynomials  
Skills Review

Name: KEY

Date: \_\_\_\_\_ Period: \_\_\_\_\_

Factor Completely.

~~$\begin{matrix} -36 & 4 \\ -9 & -5 \end{matrix}$~~

$$\begin{aligned} 1.) \quad 3x^2 - 5x - 12 \\ = 3x^2 - 9x + 4x - 12 \\ = 3x(x-3) + 4(x-3) \\ = (x-3)(3x+4) \end{aligned}$$

$$\begin{aligned} 2.) \quad 16m^4 - 81 \\ (4m^2 + 9)(4m^2 - 9) \\ (4m^2 + 9)(2m+3)(2m-3) \end{aligned}$$

$$\begin{aligned} 3.) \quad m^4 - 8m^2 + 16 \\ (m^2 - 4)(m^2 - 4) \\ (m+2)(m-2)(m+2)(m-2) \end{aligned}$$

$$\begin{aligned} 4.) \quad 8x^3 + 27 \\ 2x \ 2x \ 2x \quad 3 \ 3 \ 3 \\ (2x+3)(4x^2 - 6x + 9) \end{aligned}$$

$$\begin{aligned} 5.) \quad 125n^3 - 64 \\ 5N \ 5N \ 5N \quad 4 \ 4 \ 4 \\ (5N-4)(25N^2 + 20N + 16) \end{aligned}$$

$$\begin{aligned} 6.) \quad t^3 + 8 \\ t \ t \ t \quad 2 \ 2 \ 2 \\ (t+2)(t^2 - 2t + 4) \end{aligned}$$

$$\begin{aligned} 7.) \quad 4z^3 + 22z^2 + 10z \\ \begin{matrix} 10 & 1 \\ 11 & 1 \end{matrix} \\ 2z(2z^2 + 11z + 5) \\ 2z(2z^2 + 10z + z + 5) \\ 2z(2z(z+5) + 1(z+5)) \\ 2z(z+5)(2z+1) \end{aligned}$$

$$\begin{aligned} 8.) \quad t^4 - 16 \\ (t^2 + 4)(t^2 - 4) \\ (t^2 + 4)(t+2)(t-2) \end{aligned}$$

$$\begin{aligned} 9.) \quad k^4 - 4k^2 - 32 \\ \begin{matrix} -32 & 4 \\ -8 & -4 \end{matrix} \\ (k^2 - 8)(k^2 + 4) \end{aligned}$$

$$\begin{aligned} 10.) \quad 12p^3 - 21p^2 + 28p - 49 \\ 3p^2(4p - 7) + 7(4p - 7) \\ (4p - 7)(3p^2 + 7) \end{aligned}$$

$$\begin{aligned} 11.) \quad 12x^3 + 2x^2 - 30x - 5 \\ 2x^2(6x + 1) - 5(6x + 1) \\ (6x + 1)(2x^2 - 5) \end{aligned}$$

SAT Review:

12.) The function  $f$  is defined by a polynomial. Some values of  $x$  and  $f(x)$  are shown in the table below. Which of the following must be a factor of  $f(x)$ ?

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

- A)  $x - 2$
- B)  $x - 3$
- C)  $x - 4$
- D)  $x - 5$

13.) In the quadratic,  $y = a(x - 2)(x + 4)$ ,  $a$  is a nonzero constant. The graph of the equation in the  $xy$ -plane is a parabola with vertex  $(c, d)$ . Which of the following is equal to  $d$ ?

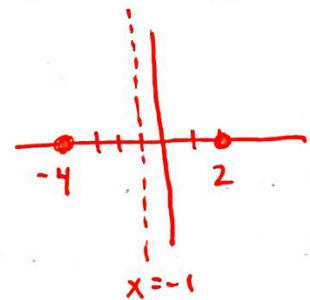
- A)  $-9a$
- B)  $-8a$
- C)  $-5a$
- D)  $-2a$

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

$$d = a(-1-2)(-1+4)$$

$$d = a(-3)(3)$$

$$d = -9a$$



14.) The equation,  $h = -16t^2 + vt + k$ , gives the height  $h$ , in feet, of a ball  $t$  seconds after it is thrown straight up with an initial speed of  $v$  feet per second from a height of  $k$  feet. Which of the following gives  $v$  in terms of  $h$ ,  $t$ , and  $k$ ?

- A)  $v = h + k - 16t$
- B)  $v = \frac{h-k+16}{t}$
- C)  $v = \frac{h+k}{t} - 16t$
- D)  $v = \frac{h-k}{t} + 16t$

$$h = -16t^2 + vt + k$$

$$h - k = -16t^2 + vt$$

$$\frac{h - k + 16t^2}{t} = \frac{vt}{t}$$

$$\frac{h}{t} - \frac{k}{t} + \frac{16t^2}{t} = v$$

SOLVE FOR V

$$\frac{h}{t} - \frac{k}{t} + 16t = v$$

$$\frac{h-k}{t} + 16t = v$$

15.) If the expression  $(-3x^2 + 5x - 2) - 2(x^2 - 2x - 1)$  is rewritten in the form  $ax^2 + bx + c$ , where  $a$ ,  $b$ , and  $c$  are constants, what is the value of  $b$ ?

$$-3x^2 + 5x - 2 - 2x^2 + 4x + 2$$

$$-5x^2 + 9x + 0$$

$$Ax^2 + Bx + C$$

