Name:	
Black	

Algebra 2H: Polynomials and Factoring Group A



There are ${f 10}$ questions in this test, each worth ${f 2pts}$.

(In the practice test you have MORE than 10, just to gain more practice!!)

You have 30 minutes to complete the test (more if you have accommodations).

=== Start of test

For each of the following questions: factor, solve or simplify as required.

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$$4x^2 - 9$$

$$(2x)^{2}-(3)^{2}$$

2. Factor

 $27x^3 + 8$

$$(3x+1)(9x^{2}+6x+4)$$

$$x^2 - 9x + 18$$

$$\chi(x-6)-3(x-6)=$$

$$(\chi -3)(\chi -6)$$

$$12x^2 - 7x + 1$$

$$12x^{2}-4x-3x+1=$$

$$15x^2 - x - 6$$

$$17x^{2}-10x+9x-6=$$

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

$$(x^{2})^{2} - (4)^{2} = (x^{2} - 4)(x^{2} - 4) = (x^{2} - 4)(x^{2} - 4)(x^{2} - 4)(x^{2} - 4) = (x^{2} - 4)(x^{2} - 4)(x^{2} - 4)(x^{2} - 4) = (x^{2} - 4)(x^{2} - 4)(x^{2} - 4)(x^{2} - 4) = (x^{2} - 4)(x^{2} - 4)(x^{2}$$

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

7. Factor

$$2x^7y - 16xy$$

$$2xy(x^{6}-8) = 2xy((x^{2})^{3}-2^{3}) = 2xy((x^{2}-2)(x^{4}-2x^{2}-4))$$

8. Simplify

$$(2x+3y)^{2}$$

$$(2x)^{2}+1-(2x)\cdot 3y+(3y)^{2}=$$

$$=(2x)^{2}+1-(2x)\cdot 3y+(3y)^{2}=$$

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

$$(3x^{2})^{2}-2\cdot 2(3x^{2})+4=$$

$$= 9x^{4}-12x^{2}+4$$

10. Solve

$$4x^2 + 12x + 9 = 0$$

$$4x^{2}+6x+6x+9=0$$

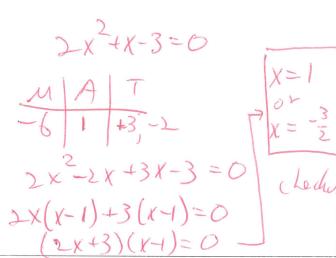
$$2x(2x+3)+3(2x+3)=0$$

$$(2x+3)(2x+3)=0$$

$$2x+3=0$$

$$X = \frac{3}{2}$$
 check V .

$$2x^2 + x = 3$$



12. Factor

$$x^4 - 16$$

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

$$= (x - 2)(x + 1) - (x^{2} + 4)$$

13. Factor

$$4x^6 + 32$$

$$4(x^{6}+8)=$$
=4((x²)³+2³)=
=4((x²+2)(x⁴+2x+4)

14. Simplify

$$(2x+3y)^{2}$$

$$(2x+3y)^{2}$$

$$= 8x^{3}-20x^{2}+50x+20x^{2}-50x+125$$

$$= 8x^{3}-120x^{2}+50x+20x^{2}-50x+125$$

15. Simplify solve

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

$$X(X-1)(2X+3)=0$$

$$\begin{array}{c} x = 0 \\ 0 \\ x = 1 \\ 0 \\ x = -\frac{3}{2} \end{array}$$

16. Solve

$$4x^2 + 12x + 9 = 0$$

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17. (Credit to Derron)

A friend describe a math trick he discovered: If I take a number and multiply it by itself, I get the number squared. If I then multiple 1 less then the original number by 1 more than the original number, I get one less than the original number squared.

a. Show that this trick works if the original number I choose is 5.

$$5 \cdot 5 = 25$$

 $(5-1)(5+1) = 4-6=24$
 $25-1=24$

b. Explain why this trick works for any number.

$$(X-1)(X+1) = X_{5}-1$$

 $X - X = X_{5}$

- c. Would this trick work if the original number is negative?
- d. Would this trick work if the original number is a fraction?
- Yes X can be Yes V x

18. Simplify

$$\left(\frac{1}{2}x^{3}\right)^{3} \cdot \left(\frac{2y^{2}}{x^{3}}\right)^{2}$$

$$\frac{1}{8}x^{9} \cdot \frac{4y^{9}}{x^{6}} = \frac{4}{8} \times \frac{x^{9}}{x^{6}} \cdot y^{9} = \boxed{\frac{1}{2}x^{3}y^{9}}$$

19. Simplify

$$\left(\frac{1}{2}x^{3}\right)^{3} \div \left(\frac{2y^{2}}{x^{3}}\right)^{2}$$

$$\frac{1}{6}x^{9} \div \left(\frac{2y^{2}}{x^{3}}\right)^{2} = \frac{1}{6}x^{9} + \frac{1}{3}x^{9} = \frac{1}{3}x^{9} = \frac{1}{3}x^{9} + \frac{1}{3}x^{9} = \frac{$$

=== End of test