Grandview High School
Honors Algebra 2
Required Summer Assignment

Name: Key

Due Date: **SECOND DAY** OF HALG2 CLASS

Please complete this assignment and bring it to your second day of Honors Algebra 2 class in August. These problems require the use of math skills that are pre-requisites for Honors Algebra 2, which means you should feel *very confident* using these skills *before* you start Honors Algebra 2. An assessment over these concepts will be given sometime during the few days of Honors Algebra 2 class. No calculators allowed.

Part 1: Factoring

Factor each polynomial expression completely. Show all work as when necessary.

1) $x^2 - 7x - 18$

$(x-9)(x+2)$

2) $p^2 - 5p - 14$

$(p-7)(p+2)$

3) $m^2 - 9m + 8$

$(m-8)(m-1)$

4) $x^2 - 16x + 63$

$(x-9)(x-7$

5) $7x^2 - 31x - 20$

$(7x+4)(x-5)$

6) $7k^2 + 9k$

$k(7k+9)$

7) $7x^2 - 45x - 28$

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

8) $2b^2 + 17b + 21$

$(2b+3)(b+7)$

9) $5p^2 - p - 18$

$(5p+9)(p-2)$

10) $28n^4 + 16n^3 - 80n^2$

$4n^2(7n-10)(n+2)$

11) $98n^2 - 200$

$2(7n+10)(7n-10)$

12) $3 + 6b + 3b^2$

$3(1+b)^2$

13) $400 - 36v^2$

$4(10+3v)(10-3v)$

14) $100x^2 + 180x + 81$

$(10x+9)^2$

15) $10n^2 + 100n + 250$

$10(n+5)^2$

16) $49n^2 - 56n + 16$

$(7n-4)^2$

17) $49x^2 - 100$

$(7x+10)(7x-10)$

18) $1 - r^2$

$(1+r)(1-r)$

Part 2: Exponent Rules

Use exponent rules to simplify the expressions. The final expression should have only POSITIVE exponents. Show all work as when necessary.

1) $(x^{-2}x^{-3})^4$

$\frac{1}{x^{20}}$

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

$\frac{2}{x^8}$

3) $(n^3)^3 \cdot 2n^{-1}$

$2n^8$

4) $(2v)^2 \cdot 2v^2$

$8v^4$

5) $\frac{2x^2y^4 \cdot 4x^2y^4 \cdot 3x}{3x^{-3}y^2}$

$8x^8y^6$

6) $\frac{2y^3 \cdot 3xy^3}{3x^2y^4}$

$\frac{2y^2}{x}$

7) $\frac{x^3y^3 \cdot x^3}{4x^2}$

$\frac{x^4y^3}{4}$

8) $\frac{3x^2y^2}{2x^{-1} \cdot 4yx^2}$

$\frac{3xy}{8}$

9) $\frac{x}{(2x^0)^2}$

$\frac{x}{4}$

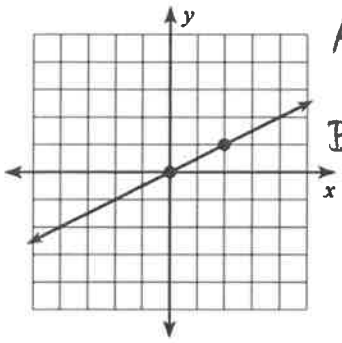
10) $\frac{2m^{-4}}{(2m^{-4})^3}$

$\frac{m^8}{4}$

Part 3: Linear Equations and Graphs

Write the equations of the given lines in both A) POINT-SLOPE form $(y - y_1) = m(x - x_1)$ and B) SLOPE-INTERCEPT $(y = mx + b)$form. Show all work when necessary. Assume each box equals one unit.

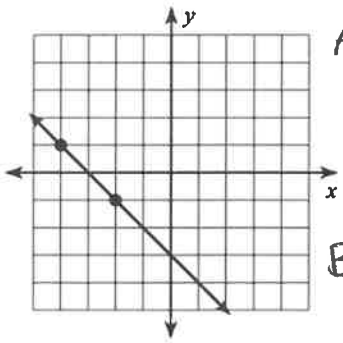
1)



A) $y-1=\frac{1}{2}(x-2)$

B) $y=\frac{1}{2}x$

2)



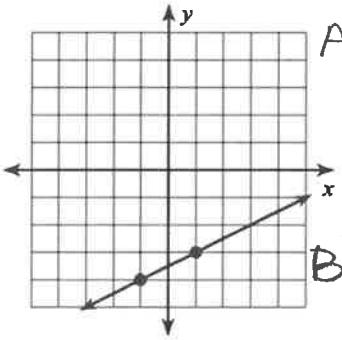
A) $y-1=-1(x+4)$

OR

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

B) $y=-x-3$

3)



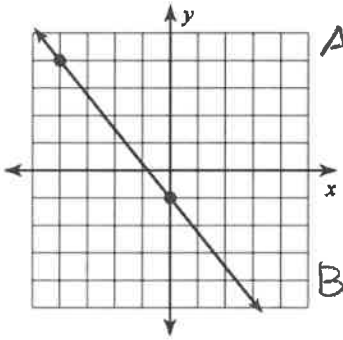
A) $y+4=\frac{1}{2}(x+1)$

OR

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

B) $y=\frac{1}{2}x-\frac{7}{2}$

4)



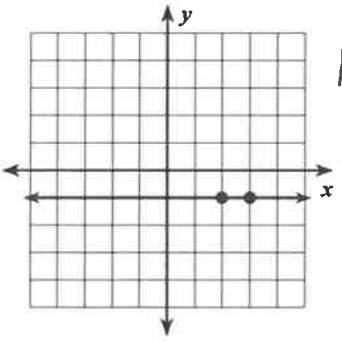
A) $y-4=\frac{-5}{4}(x+4)$

OR

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

B) $y=-\frac{5}{4}x-1$

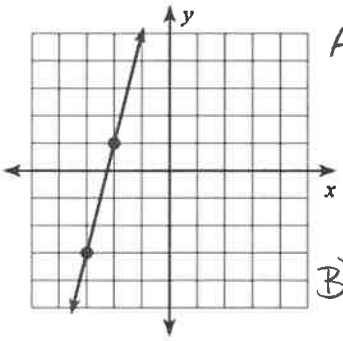
5)



All simplify to

$y=-1$

6)



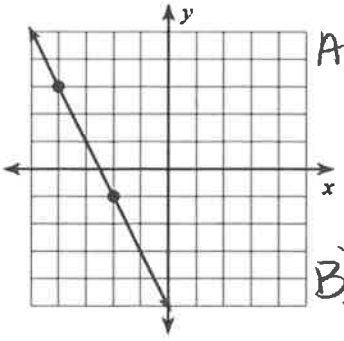
A) $y-1=4(x-2)$

OR

$y+3=4(x+3)$

B) $y=4x+9$

7)



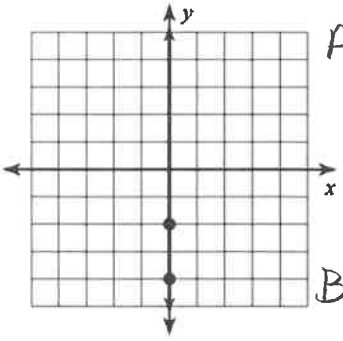
A) $y-3=-2(x+4)$

OR

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

B) $y=-2x-5$

8)



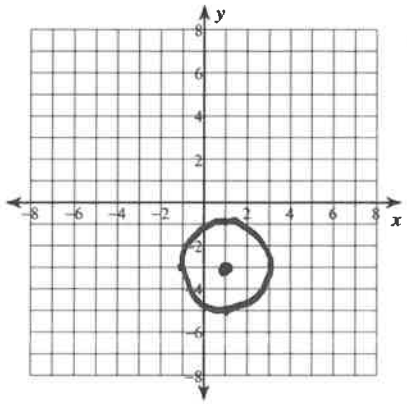
A) not possible because slope is undefined

B) $x=0$

Part 4: Equations and Graphs of Circles

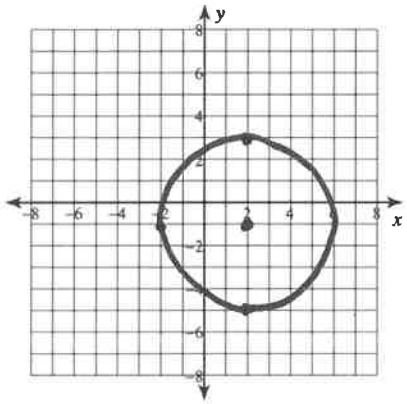
Identify the radius and the center of each circle. Then graph the circle on the coordinate plane provided. Complete the square when necessary.

1) $(x-1)^2+(y+3)^2=4$



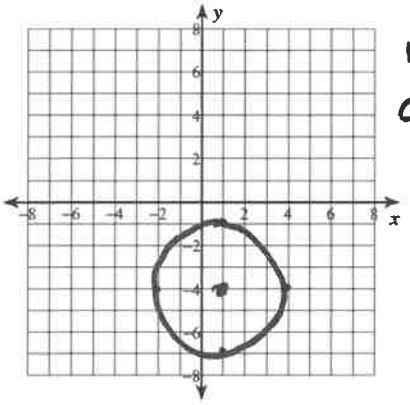
$r=2$
center: $(1,-3)$

2) $(x-2)^2+(y+1)^2=16$



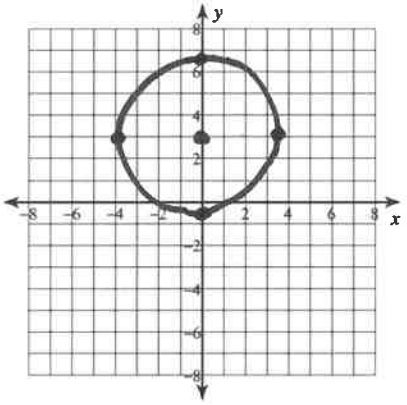
$r=4$
center: $(2,-1)$

3) $(x-1)^2+(y+4)^2=9$



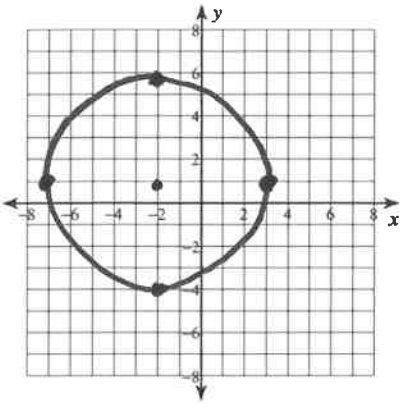
$r=3$
center: $(1,-4)$

4) $x^2+(y-3)^2=14$



$r=\sqrt{14}\approx 3.7$
center: $(0,3)$

5) $y^2+4x-20-2y=-x^2$

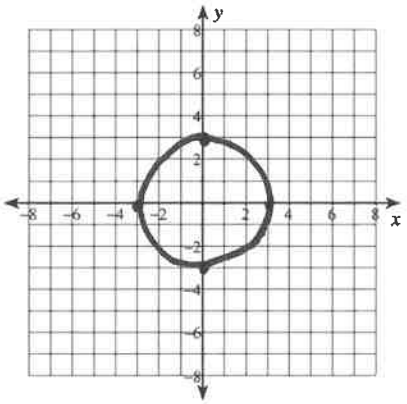


$x^2+4x+\boxed{4}+y^2-2y+\boxed{1}=20+4+1$

$(x+2)^2+(y-1)^2=25$

center: $(-2,1)$
$r=5$

6) $-9=-y^2-x^2$



$9=x^2+y^2$

center: $(0,0)$
$r=3$