Transitions to College Mathematics
Review 2.1 – 2.4

Name _____

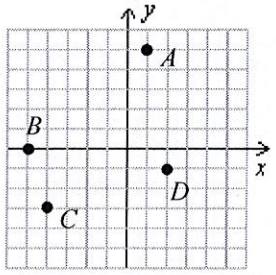
SHOW ALL WORK!

Follow the directions stated for each problem.

1. Given $A = (0, 1)$, $B = (-6, 3)$, $C = (-1, -3)$, $D = (5, -2)$, reflect A, B, C, and D through the y-axis and give the coordinates of the reflected points, A', B', C', and D'.

$A' = (0,1)$ $B' = (6,3)$ $C' = (1,-3)$ $D' = (-5,-2)$

2. Find the coordinates of points A, B, C, and D.



3. Test the equation for symmetry with respect to the x-axis, the y-axis, and the origin.

$$y^2 = x + 3$$

x-axis: $(-y)^2 = x+3$
$y^2 = x+3$ Yes

y-axis: $y^2 = -x+3$ No

origin: $(-y)^2 = -x+3$
$y^2 = -x+3$ No

Follow the directions stated for each problem.

4. Find the distance between (–10, 5) & (–1, –7).

$d = \sqrt{(-1+10)^2 + (-7-5)^2}$

$= \sqrt{9^2 + (-12)^2}$

$= \sqrt{81+144}$

$= \sqrt{225}$

$= 15$

5. Find the midpoint of the line segment with endpoints (8, 2) and (6, 6).

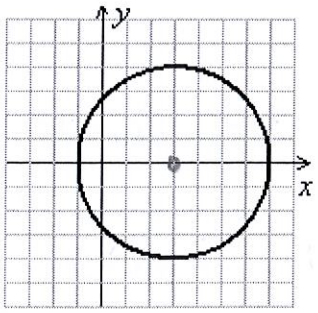
$\frac{8+6}{2}$ $\frac{2+6}{2}$

$\frac{14}{2}$ $\frac{8}{2}$

$(7,4)$

Follow the directions stated for each problem.

6. Write the equation of the circle.



(3,0)
r=4

$(x-3)^2+y^2=16$

7. Find the center and radius of the circle.

$$(x+7)^2+(y+7)^2=25$$

C:(-7,-7)

r=5

8. Find the center and radius of the circle.

$$x^2+y^2-6x+4y=28$$

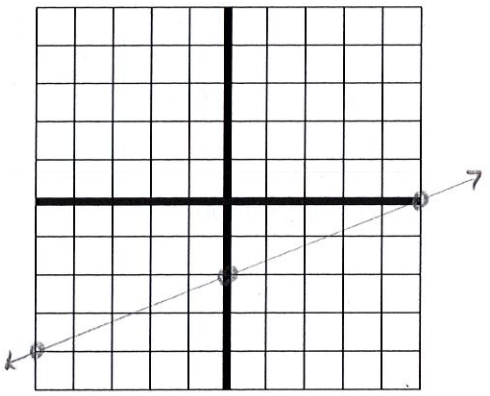
$(x^2-6x+9)+(y^2+4y+4)=28+9+4$

$(x-3)^2+(y+2)^2=41$

C: (3,-2)

$r=\sqrt{41}$

9. Graph $2x-5y=10$. Indicate the slope.

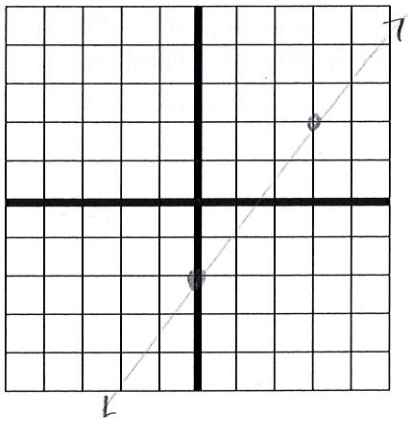


$-5y=-2x+10$

$y=\frac{2}{5}x-2$

$m=\frac{2}{5}$

10. Graph $4x-3y=6$. Indicate the slope.



$-3y=-4x+6$

$y=\frac{4}{3}x-2$

$m=\frac{4}{3}$

11. Write the equation of the line with slope $-\frac{1}{2}$ and y-intercept 3. Write the equation in standard form.

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

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

$x-2y=-6$

Follow the directions stated for each problem.

12. Write the equation of the line that passes through point (–2, –12) with a slope of 2. Give your answer in the slope-intercept form.

$y+12=2(x+2)$

$y+12=2x+4$

$y=2x-8$

13. Write the equation of the line passing through (3, 2) and (–3, 6). Write your answer in the slope-intercept form .

$m=\frac{6-2}{-3-3}=\frac{4}{-6}=-\frac{2}{3}$

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

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

$y=-\frac{2}{3}x+4$

14. Write an equation of the line passing through (1, 5), and parallel to $y = 8x + 6$. Write your answer in standard form.

$m=8$

$m_{\parallel}=8$

$y-5=8(x-1)$

$y-5=8x-8$

$-8x+y=-3$

$8x-y=3$

15. Write an equation of the line passing through (2, –1) and is perpendicular to the line with equation $3y – x = 1$. Write your answer in standard form.

$3y=x+1$

$y=\frac{1}{3}x+\frac{1}{3}$

$m=\frac{1}{3}$

$m_{\perp}=-3$

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

$y+1=-3x+6$

$3x+y=5$

16. Write an equation of the line passing through (2, -3), and parallel to $4x + 2y = 3$. Write your answer in standard form.

$2y=-4x+3$

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

$m=-2$

$m_{\parallel}=-2$

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

$y+3=-2x+4$

$2x+y=1$

17. Write an equation of the line passing through (2, –3) and is perpendicular to the line with equation $4x + 2y = 3$. Write your answer in standard form .

$m=-2$

$m_{\perp}=\frac{1}{2}$

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

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

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

$x-2y=8$

18. A video production company is planning to produce an instruction an DVD. The producer estimates that it will cost \$24,900 to produce the DVD and \$5 per unit to copy and distribute the DVD.

a. Write an equation that relates the total cost C to the number of units x.

$C = 5x + 24{,}900$

b. Interpret the slope of the cost equation.

Value: 5 **Circle one:** (Increasing) / Decreasing

As the number of DVD's increases, the total cost increases

c. If the budget for the project is \$62,000, how many DVD's can be produce without exceeding the budget?

$62{,}000 = 5x + 24{,}900$

$37{,}100 = 5x$

$7420 = x$

7,420 DVD's

19. Do heavier cars really use more gasoline? The table below compares the weight of a vehicle in hundreds of pounds (x) to the miles per gallon (y).

Weight (hundreds of lbs) (x)	Miles per gallon (y)
27	30
44	19
32	24
47	13
23	29
40	17
34	21
52	14

a. Find the linear regression model for the data.

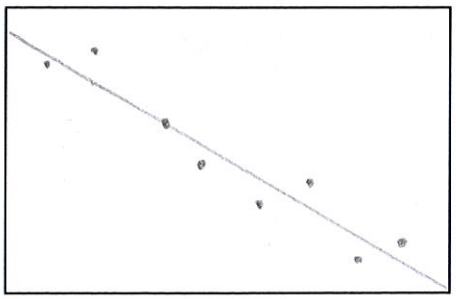
$y = -0.60x + 43.33$

b. Interpret the slope of the equation.

Value: -0.6

Circle one: Increasing / (Decreasing)

As the weight of the car increases, the MPG's decrease



d. Sketch the graph of the model

c. How many mpg's would you expect a 3,000 lbs vehicle to get? Is this an example of *interpolation* or *extrapolation*?

$y = -0.60(30) + 43.33$

$y = 25.33$ MPG

e. If you want a car that averages no more than 30mpg, what is the maximum weight the car can have?

$30 = -0.6x + 43.33$

$-13.33 = -0.6x$

$22.22 = x$

Approximately 2,222 lbs