Review – Coordinate Geometry Name Huff

1. Prove that ΔABC is a right triangle. A(0, 0), B(-2, 3), C(6, 4)

$m_{\overline{AB}} = \frac{3-0}{-2-0} = \frac{-3}{2}$

Slopes are opp recip which means $\overline{AB} \perp \overline{AC}$

So Δ ABC is RT.

$m_{\overline{AC}} = \frac{4-0}{6-0} = \frac{2}{3}$

2. Prove that ABCD is a parallelogram. A(1, 1), B(2, -2), C(-1, -1), D(-2, 2)

midpt $\overline{AC}$ $\left(\frac{1+^-1}{2}, \frac{1+^-1}{2}\right) = \left(\frac{0}{2}, \frac{0}{2}\right) = (0,0)$

midpt $\overline{BD}$ $\left(\frac{2+^-2}{2}, \frac{-2+2}{2}\right) = \left(\frac{0}{2}, \frac{0}{2}\right) = (0,0)$

Same midpt so Diagonals bisect each other.

∴ ABCD is a P'gram

3. Prove that ABCD from #2 is a rhombus.

$m_{\overline{AC}} = \frac{-1-1}{-1-1} = \frac{-2}{-2} = 1$

$m_{\overline{BD}} = \frac{2-^-2}{-2-2} = \frac{4}{-4} = -1$

Slopes are opp Reciprocals so the diagonals are ⊥

∴ the P'gram is a Rhombus.

4. Given J(0, 2) and K(0, -4), what coordinates of L would make ΔJKL equilateral?

think about the 30-60-90s

$(3\sqrt{3}, -1)$

OR

$(-3\sqrt{3}, -1)$

5. Prove that RECT is a rectangle. R(0, 3), E(.5, 0), C(6.5, 1), T(6, 4)

$RC = \sqrt{(6.5)^2 + (2)^2} = \sqrt{46.25}$

$ET = \sqrt{(5.5)^2 + (4)^2} = \sqrt{46.25}$

Diagonals are ≅ ∴ RECT is a rectangle

6. What's the equation of a line tangent to $(x – 3)^2 + (y + 2)^2 = 32$ at the point (7, 2)

CTR. @ (3, -2)

$m_r = \frac{2-^-2}{7-3} = \frac{4}{4} = 1$ $m_\perp = -1$

$y - y_1 = m(x - x_1)$

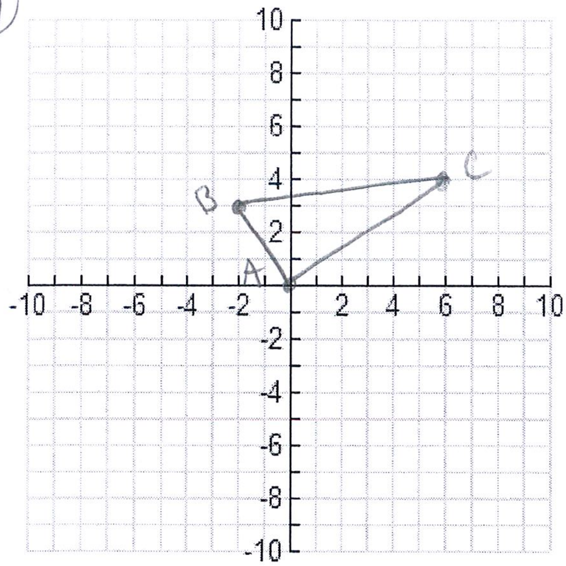
$y - 2 = -1(x - 7)$

$y - 2 = -1x + 7$

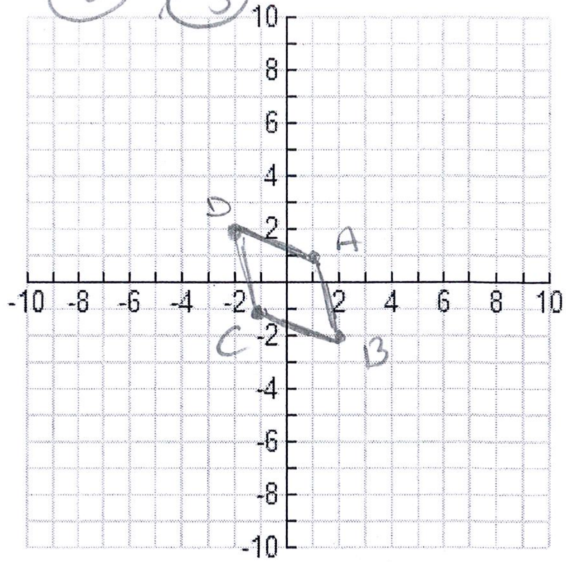
$\boxed{y = -x + 9}$

Name ______________________________

1



2 & 3



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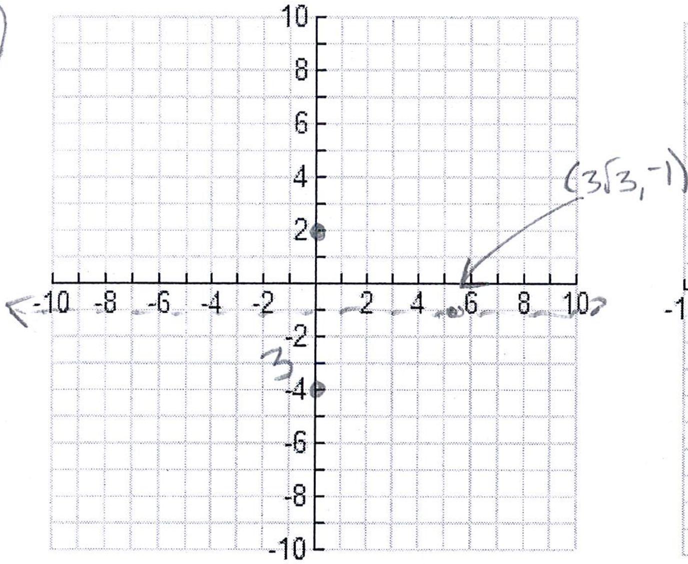

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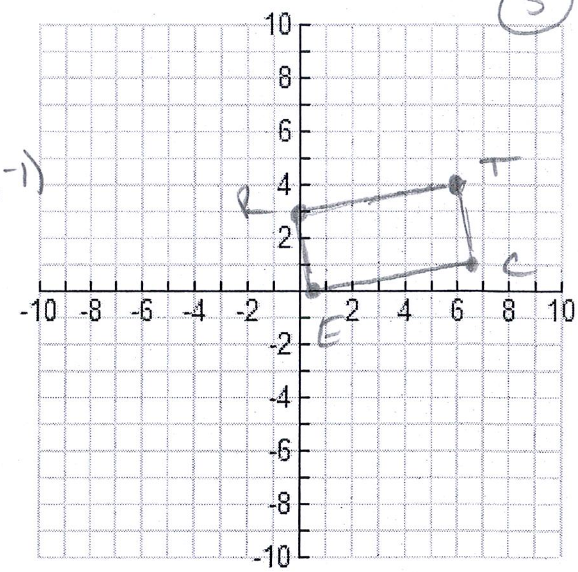

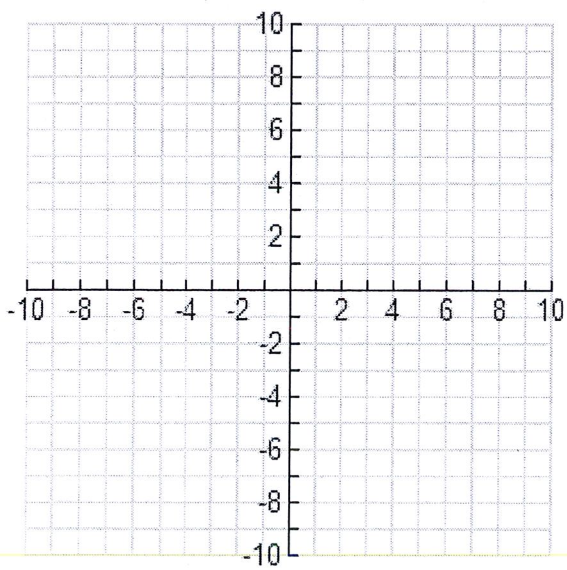

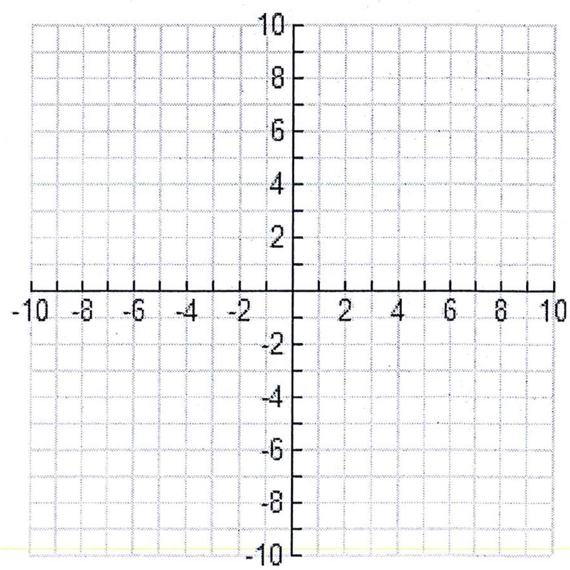

Review - Coordinate Geometry

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$y - y_1 = m(x - x_1)$

Date________________

Write the slope-intercept form of the equation of the line described.

7) through: $(-4, -5)$, parallel to $y = \frac{9}{4}x + 2$

$(y - {}^-5) = \frac{9}{4}(x - {}^-4)$

$y + 5 = 9/4x + 9$

$\boxed{y = \frac{9}{4}x + 4}$

8) through: $(5, -2)$, perp. to $y = \frac{7}{5}x - 1$

$y - {}^-2 = \frac{-5}{7}(x - 5)$

$y + 2 = \frac{-5}{7}x + \frac{25}{7}$

$-2 \qquad -2$

$\boxed{y = \frac{-5}{7}x + \frac{11}{7}}$

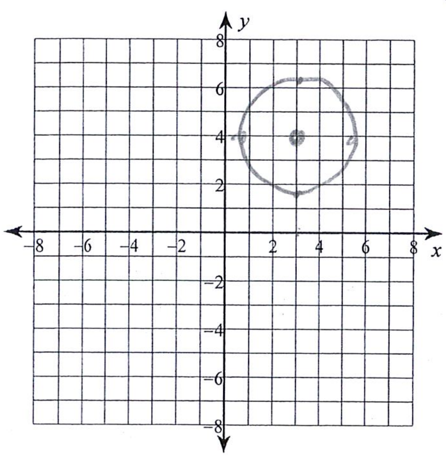
Identify the center and radius of each. Then sketch the graph.

9) $(x - 3)^2 + (y - 4)^2 = 5$

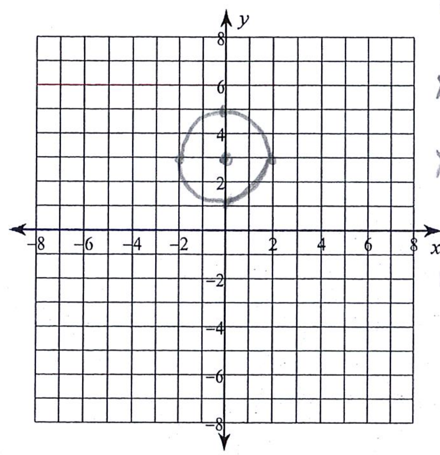
CTR $(3, 4)$

$r = \sqrt{5}$

≈ 2.2



10) $x^2 + y^2 - 6y + 5 = 0$



$x^2 + y^2 - 6y = -5$

$x^2 + y^2 - 6y + 9 = -5 + 9$

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

CTR $(0, 3)$

$r = 2$

Use the information provided to write the standard form equation of each circle.

11) Center: $(-9, 3)$
Point on Circle: $(-15, 6)$

$d = \sqrt{6^2 + 3^2}$

$= \sqrt{36 + 9}$

$r = \sqrt{45}$

$\boxed{(x+9)^2 + (y-3)^2 = 45}$

12) Center: $(12, -10)$
Point on Circle: $(14, -8)$

$d = \sqrt{2^2 + 2^2}$

$= \sqrt{4 + 4}$

$r = \sqrt{8}$

$\boxed{(x-12)^2 + (y+10)^2 = 8}$

13) Center: $(-4, -13)$
Circumference: 2π $\quad d = 2 \quad r = 1$

$(x + 4)^2 + (y + 13)^2 = 1$

14) Ends of a diameter: $(4, 16)$ and $(-10, -2)$

CTR $\left(\frac{4 + {}^-10}{2}, \frac{16 + {}^-2}{2}\right)$

$(-3, 7)$

$d = \sqrt{7^2 + 9^2}$

$= \sqrt{130}$

$(x+3)^2 + (y-7)^2 = 130$

Determine if the points (2, 3) & (-5, 6) are on the interior, exterior, or on the circles in #15 & 16.

15) $(x + 2)^2 + (y + 13)^2 = 18$

$(2+2)^2 + (3+13)^2 \stackrel{?}{=} 18$

$4^2 + 16^2 > 18$

$(2,3)$ OUTSIDE

$(-5+2)^2 + (6+13)^2 \stackrel{?}{=} 18$

$(-3)^2 + (19)^2 > 18$

$(-5, 6)$ is outside

16) $(x + 7)^2 + (y - 5)^2 = 81$

$(2+7)^2 + (3-5)^2 \stackrel{?}{=} 81$

$9^2 + (-3)^2 > 81$

$(2,3)$ is out

$(-5+7)^2 + (6-5)^2 \stackrel{?}{=} 81$

$2^2 + 1^2 \stackrel{?}{=} 81$

$4 + 1 < 81$

$(-5, 6)$ is inside