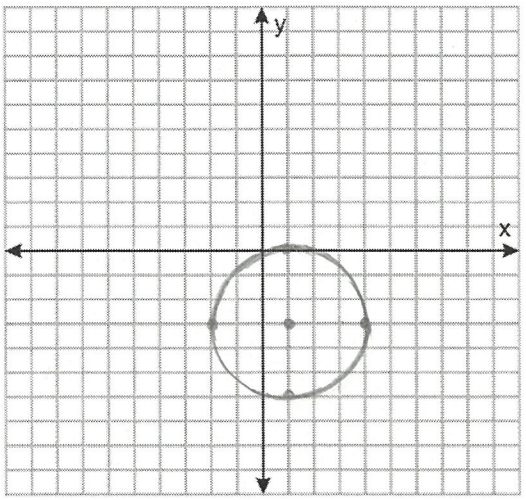
Precalculus
Review 1.1-1.5

Name Key
Period_____ Date_____

1. Graph: $(x-1)^2+(y+3)^2=9$

C: (1, -3)
R: 3



2. Write the equation of the circle with the given information.

a) center: $(-4,7)$ and radius: 8

$(x+4)^2+(y-7)^2=64$

b) endpoints of diameter: $(-2,-5)$ and $(-2,9)$

$(x+2)^2+(y-2)^2=49$

R: 7
C: (-2, 2)

c) center $(-1,-4)$ and solution point $(4,8)$

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

$(4+1)^2+(8+4)^2=r^2$

$r=13$

$(x+1)^2+(y+4)^2=169$

3. Write the equation of the line with the given information.

a) Through the point $(3,-5)$ with slope $\frac{2}{3}$

$y--5=\frac{2}{3}(x-3)$

$y+5=\frac{2}{3}(x-3)$

$3y+15=2(x-3)$

$3y+15=2x-6$

$3y=2x-21$

$y=\frac{2}{3}x-7$ ★

b) Through points $(-3,-7)$ and $(1,6)$

$m=\frac{-7-6}{-3-1}=\frac{-13}{-4}=\frac{13}{4}$

$y-6=\frac{13}{4}(x-1)$

$4y-24=13x-13$

$4y=13x+11$

$y=\frac{13}{4}x+\frac{11}{4}$ ★

c) Parallel to the line $-4x+16y=10$ and passes through the point $(-2,9)$

$16y=4x+10$

$y=\frac{4}{16}x+\frac{10}{16}$

$y=\frac{1}{4}x+5/8$

$m=1/4$

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

$y=1/4x+1/2+9$

$y=\frac{1}{4}x+\frac{19}{2}$ ★

d) Perpendicular to the line $-4x+16y=10$ and passes through the point $(-2,9)$

$\perp m=-4$

$y-9=-4(x+2)$

$y=-4x-8+9$

$y=-4x+1$ ★

e) Perpendicular to the line $y=\frac{5}{7}x-9$

$\perp m=-\frac{7}{5}$

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

4. Find the distance between the 2 points $(-8,-1)$ and $(-3,-6)$

$d = \sqrt{(-8++3)^2 + (-1++6)^2}$

$d = \sqrt{50} = 5\sqrt{2} \approx 7.071$

5. Find the slope between the 2 points $(2,4)$ and $(8,-6)$

$m = \frac{4+-6}{2-8} = \frac{10}{-6} = -\frac{5}{3}$

6. Solve for A. Given: $m = \frac{2}{7}$ between the 2 points $(A,6)$ and $(2,-4)$

$\frac{2}{7} = \frac{6++4}{A-2}$

$2A - 4 = 70$

$2A = 74$

$A = 37$

7. Determine whether the function is odd, even or neither. Describe its symmetry.

a) $f(x) = \frac{x^2-5}{4x}$ $\quad \frac{(-x)^2-5}{4(-x)} = -\frac{x^2-5}{4x}$

odd

symmetry origin

b) $f(x) = 3x^3 - 9x^2 + 4x + 8$

$3(-x)^3 - 9(-x)^2 + 4(-x) + 8$

$-3x^3 - 9x^2 - 4x + 8$

Neither

c) $g(x) = \frac{1}{x} - 4$

$= \frac{1}{(-x)} - 4 \Rightarrow -\frac{1}{x} - 4$

Neither

d) $h(x) = x^4 - 16x^2$

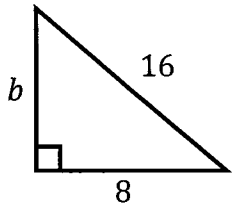
$= (-x)^4 - 16(-x)^2$

$= x^4 - 16x^2$

even

symmetry y-axis

8. Find the length of side b.



$b = \sqrt{16^2 - 8^2}$

$b = 8\sqrt{3}$

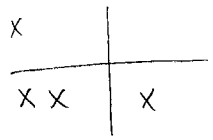
$b \approx 13.856$

9. Determine the quadrant(s) in which (x, y) could be located, given:

a) $x = -5$ *and* $y < 0$ III

b) $x > 0$ *and* $y > 0$ I

a)



b)

10. Find the $y-$ *intercept* for the given function.

$y = \frac{x+6}{|x-1|}$

$y = \frac{0+6}{|0-1|} = \frac{6}{1} = 6$ $(0, 6)$

11. Find the zeros.

$f(x) = 7x^2 - 25x - 12$

$0 = (7x + 3)(x - 4)$

$x = \frac{-3}{7}$ $x = 4$

12. Find the average rate of change from x_1 to x_2 for the given function $(x) = x^3 - 2x^2 + 1$.

a) $x_1 = -2$ to $x_2 = -3$

$(-2, -15)$

$(-3, -44)$

$m = \frac{-15 + +44}{-2 + +3} = \frac{29}{1} = 29$

b) $x_1 = 3$ to $x_2 = 5$

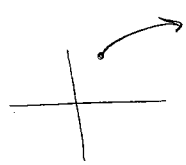
$(3, 10)$

$(5, 76)$

$m = \frac{10 - 76}{3 - 5} = \frac{-66}{-2} = 33$

13. Find the domain of the given functions.

a) $f(x) = \sqrt{x-2} + 8$



D: $[2, \infty)$ or $x \geq 2$

b) $g(x) = \frac{x^2+2x+4}{x+7}$

$x \neq -7$

D: $\mathbb{R}$, $x \neq -7$ or $(-\infty, -7) \cup (-7, \infty)$

c) $h(x) = \frac{\sqrt{x-5}}{x-9}$ $x \geq 5$ $x \neq 9$

D: $x \geq 5$, $x \neq 9$ or $[5, 9) \cup (9, \infty)$

14. Find the maximum and minimum values of the given function.

$f(x) = x^3 - 2x^2 - 2x + 8$

Max: $(-.387, 8.416)$

MIN: $(1.720, 3.731)$

15. Find the x and y intercept(s).

a) $x^4 - 4x^2 - 45$

$(x^2-9)(x^2+5)$

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

x-int: $(-3,0)$ $(3,0)$

y-int: $(0,-45)$

b) $x^2 + 12x - 64$

$(x+16)(x-4)$

x-int: $(-16,0)$ $(4,0)$

y-int: $(0,-64)$

16. Given: $f(x) = \begin{cases} -2x + 7, & x < -1 \\ (x-2)^2 - 3, & x \geq -1 \end{cases}$

a) $f(-3) = -2(-3)+7 = 13$

b) $f(-1) = (-1-2)^2 - 3 = 6$

c) $f(2) = (2-2)^2 - 3 = -3$

17. Determine the intervals over which the function is increasing, decreasing or constant.

constant $(-6,-4)$

increase $(-4,-1) \cup (4,\infty)$

decrease $(-4,-3) \cup (-1,4)$