Chapter 1 Review **Ad majorem Dei gloriam** **Accelerated Algebra 2 and Precalculus**
No calculator **Mr. Reis**

Name KEY

1. Write the equation of the line through the point $(-3,12)$ and perpendicular to the line $-3x+5y=3$. Leave your answer in slope-intercept form.

$5y = 3x + 3$

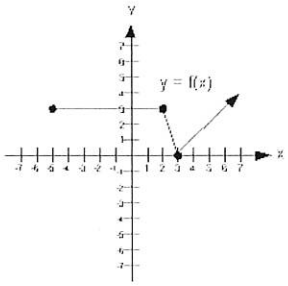
$y = \frac{3}{5}x + \frac{3}{5}$

$y - 12 = \frac{-5}{3}(x+3)$

$y - 12 = \frac{-5}{3}x - 5$

$y = \frac{-5}{3}x + 7$

2. The graph of f(x) is given below. Use interval notation for your answers.



A. On what interval is the function increasing?

$(3, \infty)$

B. On what interval is the function decreasing?

$(2, 3)$

C. On what interval is the function constant?

$(-5, 2)$

3. For the function $f(x)=2x^2-5x$, find the difference quotient.

$$\frac{f(x+h)-f(x)}{h} = \frac{[2(x+h)^2-5(x+h)]-[2x^2-5x]}{h}$$

$$= \frac{2x^2+4xh+2h^2-5x-5h-2x^2+5x}{h} = \frac{4xh+2h^2-5h}{h}$$

$$= 4x+2h-5$$

4. Find the domain of the function in interval notation.

$f(x)=\frac{2}{x+9}$ $(-\infty, -9) \cup (-9, \infty)$

5. Is the function $f(x)=(x-3)^2$ even, odd, or neither?

Neither

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

6. What kind of symmetry does an even function have? An odd function? A function and its inverse?

Even : reflection across y-axis

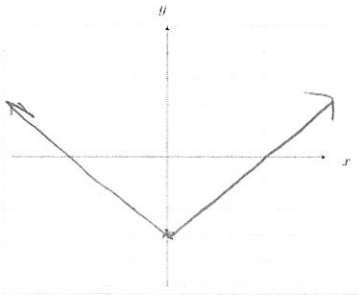
Odd : rotation (180°) about origin

Fcn/Inv. : reflection across $y = x$

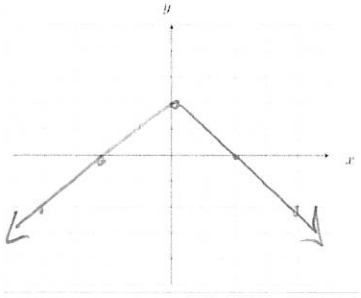
7. Given $f(x)=|x|$ graph the following:

not one to one

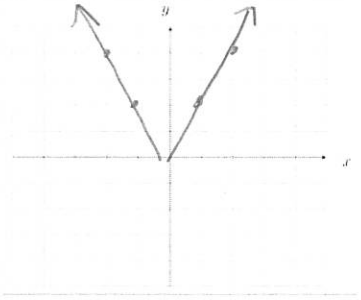
A. *f(x)-3*



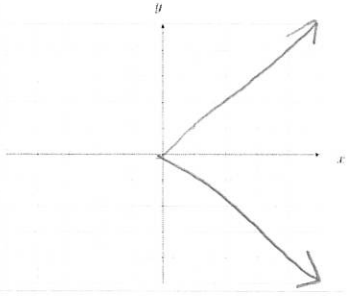
B. *-f(x)+2*



C. *2 f(-x)*



D. *$f^{-1}(x)$*



inverse of relation shown

8. Given that $f(x)=x^2$ and $g(x)=\sqrt{x}$ find $f(g(x))$ and its domain.

$f(g(x)) = (\sqrt{x})^2 = x$ $\quad x \geq 0$ since domain of $g(x)$ is $x \geq 0$

9. Find functions f(x) and g(x) such that $h(x)=f(g(x))$, where $h(x)=\sqrt{x+2}$.

$g(x) = x+2$

$f(x) = \sqrt{x}$

10. Find the inverse of the function below and graph both $f(x)$ and $f^{-1}(x)$ on the given coordinate plane.

$f(x)=(x-4)^3-2$

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

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

$\sqrt[3]{x+2}=y-4$

$\sqrt[3]{x+2}+4=y$

$f^{-1}(x)=\sqrt[3]{x+2}+4$