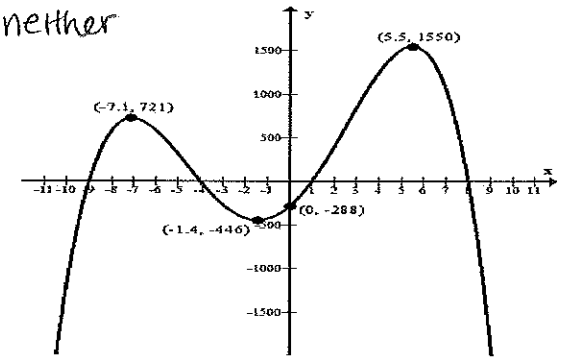
MAC1105 College Algebra
3.2 Practice Problems

have y-axis symmetry

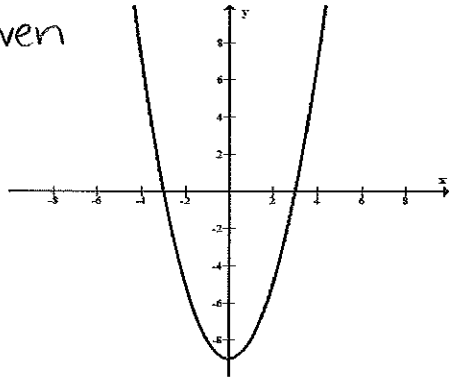
have origin symmetry

1. Determine whether each graph given is the graph of an even function, an odd function, or a function that is neither even nor odd.

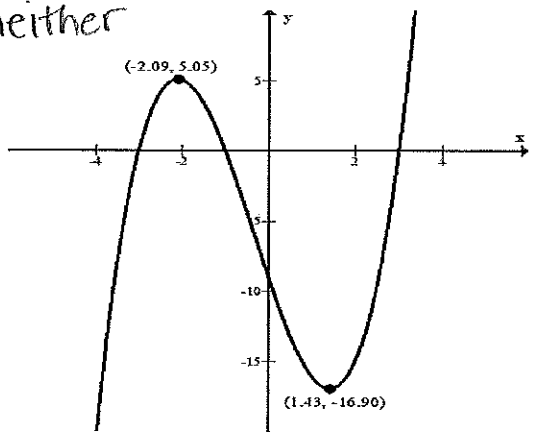
a. neither



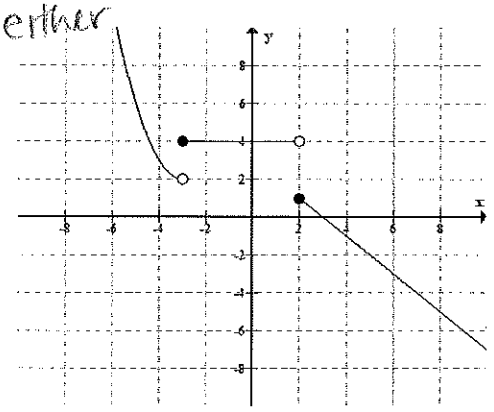
b. even



c. neither



d. neither



2. For all of the graphs where is the graph increasing? Where is the graph decreasing? Where is the graph constant?

1a. INC: $(-\infty,-7.1) \cup (-1.4,5.5)$ DEC: $(-7.1,-1.4) \cup (5.5,\infty)$

1b. INC: $(0,\infty)$ DEC: $(-\infty,0)$

1c. INC: $(-\infty,-2.09) \cup (1.43,\infty)$ DEC $(-2.09, 1.43)$

1d. DEC: $(-\infty,-3) \cup (2,\infty)$ Constant: $(-3,2)$

3. For all of the graphs what is the domain? What is the range?

1a. Domain $(-\infty,\infty)$ Range $(-\infty,1550]$

1b. Domain $(-\infty,\infty)$ Range $[-9,\infty)$

1c. Domain $(-\infty,\infty)$ Range $(-\infty,\infty)$

1d. Domain $(-\infty,\infty)$ Range $(-\infty,1] \cup (2,\infty)$

4. For the graphs 1a, 1b and 1c at what value(s) of x, if any, does f have a relative minimum/maximum? List the relative minimum/maximum values.

1a. relative max of 721 at $x=-7.1$; relative max of 1550 at $x=5.5$; relative min of -446 at $x=-1.4$

1b. relative min of -9 at $x=0$

1c. relative min of -16.90 at $x=1.43$; relative max of 5.05 at $x=-2.09$

5. For all of the graphs and 1d what are the x- intercepts? What are the y-intercepts? Write ordered pairs.

1a. $(-9,0)$ $(-4,0)$ $(1,0)$ $(8,0)$ $(0,-288)$

1b. $(3,0)$ $(-3,0)$ $(0,-9)$

1c. $(-3,0)$ $(3,0)$ $(-1,0)$ $(0,-9)$

1d. $(0,4)$ $(3,0)$

6. Determine whether each function is even, odd, or neither.

a. $f(x)=x^3-x$

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

$=-x^3+x$

odd

b. $h(x)=x^2+3$

$h(-x)=(-x)^2+3$

$=x^2+3$

even

c. $g(x)=|x|+3$

$g(-x)=|-x|+3$

$=|x|+3$

even

d. $g(x)=x^2-x+2$

$g(-x)=(-x)^2-(-x)+2$

$=x^2+x+2$

neither

7. Find the x and y intercepts algebraically.

a. $f(x)=-4x+8$

x-int $y=0$

$f(x)=0$

$0=-4x+8$

$-8 \quad -8$

$\frac{-8}{-4}=\frac{-4x}{-4}$ $x=2$ $(2,0)$

y-int $x=0$

$f(0)=-4(0)+8$

$=8$

$(0,8)$

b. $g(x)=x^2-5x+6$

x-int $y=0$ $g(x)=0$

$0=x^2-5x+6$

$0=(x-2)(x-3)$

$x-2=0 \quad x-3=0$

$x=2 \quad x=3$

$(2,0) \quad (3,0)$

y-int $x=0$

$g(0)=(0)^2-5(0)+6$

$=6$

$(0,6)$

c. $h(x)=|x-3|-4$

x-int $y=0$ $h(x)=0$

$0=|x-3|-4$

$+4 \quad +4$

$4=|x-3|$

$4=x-3 \quad -4=x-3$

$+3 \quad +3 \quad +3 \quad +3$

$7=x \quad -1=x$

$(7,0) \quad (-1,0)$

y-int $x=0$

$h(0)=|0-3|-4$

$=|-3|-4$

$=3-4$

$=-1$

$(0,-1)$

d. $p(x)=2x^2-3x+4$

x-int $y=0$ $p(x)=0$

$0=2x^2-3x+4$

$x=\frac{-(-3)\pm\sqrt{(-3)^2-4(2)(4)}}{2(2)}$

$=\frac{3\pm\sqrt{9-32}}{4}$

$=\frac{3\pm\sqrt{-21}}{4}=\frac{3\pm i\sqrt{21}}{4}$

no x-int since solutions are complex

y-int $x=0$

$p(0)=2(0)^2-3(0)+4$

$=4$

$(0,4)$