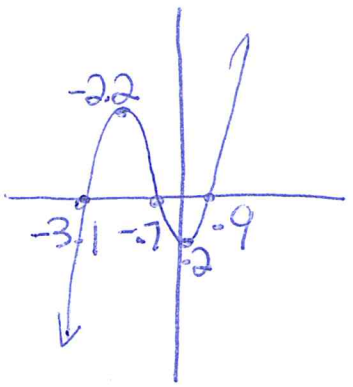
Name Schlansky
Mr. Schlansky

Date _____
Algebra II

Intervals with Key Points

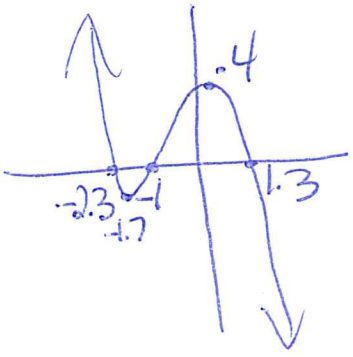
1. Over what intervals are $f(x)=x^3+3x^2-x-2$:

Increasing	Decreasing	Positive	Negative
$(-\infty,-2.2)$ or $(.2,\infty)$	$(-2.2,.2)$	$(-3.1,.7)$ or $(.9,\infty)$	$(-\infty,-3.1)$ or $(-.7,.9)$
$x<-2.2$ or $x>.2$	$-2.2<x<.2$	$-3.1<x<.7$ or $x>.9$	$x<-3.1$ or $-.7<x<.9$



2. Over what intervals are $f(x)=-x^3-2x^2+2x+3$:

Increasing	Decreasing	Positive	Negative
$(-1.7,.4)$	$(-\infty,-1.7)$ or $(.4,\infty)$	$(-\infty,-2.3)$ or $(-1,1.3)$	$(-2.3,-1)$ or $(1.3,\infty)$
$-1.7<x<.4$	$x<-1.7$ or $x>.4$	$x<-2.3$ or $-1<x<1.3$	$-2.3<x<-1$ or $x>1.3$



3. Over what intervals are $f(x)=-x^4+15x^2-7$:

Increasing	Decreasing	Positive	Negative
$(-\infty,-2.7)$ or $(0,2.7)$	$(-2.7,0)$ or $(2.7,\infty)$	$(-3.8,-.7)$ or $(.7,3.8)$	$(-\infty,-3.8)$ or $(-.7,.7)$ or $(3.8,\infty)$
$x<-2.7$ or $0<x<2.7$	$-2.7<x<0$ or $x>2.7$	$-3.8<x<-.7$ or $.7<x<3.8$	$x<-3.8$ or $-.7<x<.7$ or $x>3.8$

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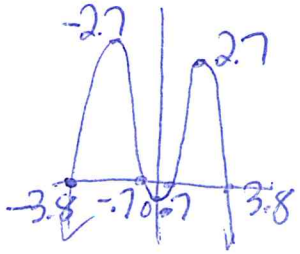

4. Over what intervals are $f(x)=x^3+8x^2+3x-8$:

Increasing	Decreasing	Positive	Negative
$(-\infty,-5.1)$ or $(-.2,\infty)$	$(-5.1,-.2)$	$(-7.5,-1.3)$ or $(.8,\infty)$	$(-\infty,-7.5)$ or $(-1.3,.8)$
$x<-5.1$ or $x>-.2$	$-5.1<x<-.2$	$-7.5<x<-1.3$ or $x>.8$	$x<-7.5$ or $-1.3<x<.8$

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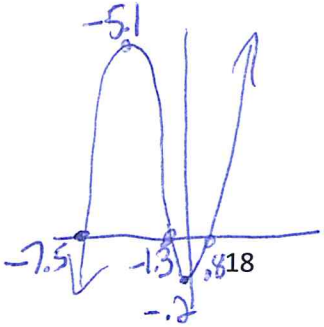
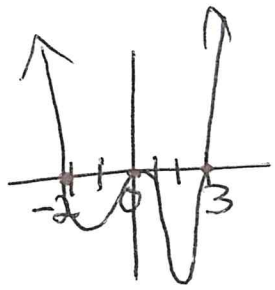


Positive

5. Given $f(x) = x^4 - x^3 - 6x^2$, for what values of x will $f(x) > 0$?

1) $x < -2$, only
2) $x < -2$ or $x > 3$
3) $x < -2$ or $0 \le x \le 3$
4) $x > 3$, only

$(-\infty, -2)$
$(3, \infty)$



6. At which x value is the graph of $f(x) = 2x^3 - 11x^2 - 14x + 26$ *not* decreasing?

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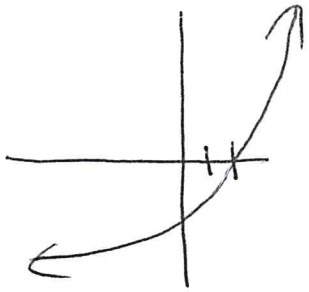
1) -.5
2) 3.9
3) 1.7
4) 4.3

$(-.6, 4.2)$

7. The graph of $y = 2^x - 4$ is positive on which interval?

1) $(-\infty, \infty)$
2) $(2, \infty)$
3) $(0, \infty)$
4) $(-4, \infty)$

$(2, \infty)$



8. An estimate of the number of milligrams of a medication in the bloodstream t hours after 400 mg has been taken can be modeled by the function below.

$$I(t) = 0.5t^4 + 3.45t^3 - 96.65t^2 + 347.7t,$$

where $0 \le t \le 6$

Over what time interval does the amount of medication in the bloodstream strictly increase?

1) 0 to 2 hours
2) 0 to 3 hours
3) 2 to 6 hours
4) 3 to 6 hours

this is contained within

$(0, 2.15)$

Xmin 0
Xmax 6

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Ymax 500