Bell Ringer:

Add characteristics of parabolas - a, c, etc.

$a>0$ open up
$a<0$ open down

$c \rightarrow$ y-int
$y=0$ origin
$y>0$ above x-axis
$y<0$ below x-axis

$a>0$ ∪
$c<0$
$b^2-4ac>0$ 2 roots
$\frac{-b}{2a}>0$

b^2-4ac # of roots
$b^2-4ac<0$ no root
$b^2-4ac=0$ 1 root (bounce)
$b^2-4ac>0$ 2 root

$\frac{-b}{2a}$ axis of symmetry (vertex)

$\frac{-b}{2a}=0$ y-axis
$\frac{-b}{2a}>0$ right y-axis
$\frac{-b}{2a}<0$ left y-axis

Agenda

Review Answers
Review Questions

1. $\frac{2-i}{7+2i}\cdot\frac{7-2i}{7-2i}=\frac{14-4i-7i+2i^2}{49-4i^2}$

$=\frac{12-11i}{53}$

b. $3i+6i=9i$

c. $3i-81$

d. $-18+15i+12i-10i^2$

$-8+27i$

e. $\frac{-2}{3i}\cdot\frac{i}{i}=\frac{-2i}{3i^2}=\frac{2i}{5}$

$i^2=-i$

$i^3=-i$

$i^4=1$

Review Sheet A

1. Simplify

a. $\frac{2}{}$

$(3-2i)(-6+5i)$

$-18+15i+12i-10i^2$

$-8+27i$

$m=\frac{7-5}{3+2}=\frac{2}{5}$

$y-7=\frac{2}{5}(x-3)$ or $y-5=\frac{2}{5}(x+2)$

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

$-\frac{2}{3}$

l line that passes through (9, 13) $y-13=-\frac{2}{3}(x-9)$

ular line $\frac{3}{2}$

dicular line that passes through (-2,5) $y-5=\frac{3}{2}(x+2)$

4a. $x^3-x=0$

$x(x^2-1)=0$

$x(x+1)(x-1)=0$

$x=0,-1,1$

b. $\frac{3\pm\sqrt{9-4(1)(1)}}{2(1)}=\frac{3\pm\sqrt{5}}{2}$

c. $x=\pm\sqrt{-81}=\pm 9i$

d. $x^2-21x-100=0$

$(x-25)(x+4)=0$

$x=25,-4$

4.

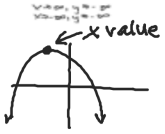
$\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

5.

e) $x-5=\pm\sqrt{6}$

$x=5\pm\sqrt{6}$

5: no min
max (-2,5)
x-int: (4,0) (-8,0)
y-int (0,8)
inc: $x<-2$
dec $x>-2$



b. no max
min (-2.5,-24.25)
x-int: (-5,0) (0,0)
y-int (0,0)
inc $x>-2.5$
dec $x<-2.5$

c. max (-1.155, 3.079)
min (1.155, 3.079)
x-int (-3,0) (0,0) (3,0)
y-int (0,0)
inc $x<-1.155$ $x>1.155$
dec $-1.155<x<1.155$

nd behavior of each function.

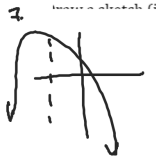
a. $y = 3^x$ D: ℝ R: $y>0$

b. $y = \log x$ D: $x>0$ R: ℝ

c. $y = \frac{3+x}{5}$ D: ℝ R: ℝ

d. $y = \sqrt{2-x}$ D: $2-x\geq 0$, $2\geq x$ R: $y\geq 0$

7



8. a) x^2+4

b) $y=\frac{1}{10}(x+2)^3(x-5)^2$

c) $y=-\frac{11}{16}(x+2)^2+7$

9a. $\frac{1}{x^{21}}$

b. $x^{5/12}$

c. $x=7$

d. $\frac{c^{42}}{27d^6}$

e. $x=17/16$

f. $x=2$

g. $x=8$

h. $x^{18\sqrt{2}}$

i. $x=6$

j. 64

10a $x=2/5$

b $x=9$

c. doesn't factor ∴

d. $x=9$

e. $x=3$

f. $x=7$

g. $x=4$

8b. triple root -2
double root 5 through $(3,50)$

$y = a(x+2)^3(x-5)^2$ *

$50 = a(3+2)^3(3-5)^2$

$50 = a(5)^3(-2)^2$

$50 = a \cdot 125 \cdot 4$

$\frac{50}{500} = a \cdot \frac{500}{500}$

$a = \frac{1}{10}$

$y = \frac{1}{10}(x+2)^3(x-5)^2$

8c. min $(-2,7)$
thru $(2,-4)$

$y = a(x-h)^2 + k$

$y = a(x+2)^2 + 7$

$-4 = a(2+2)^2 + 7$

$-4 = a(4)^2 + 7$

$\frac{-11}{16} = \frac{16a}{16}$

$y = -\frac{11}{16}(x+2)^2 + 7$

9a. $(x^{-3})^7 = x^{-21} = \frac{1}{x^{21}}$

b. $\frac{\sqrt[4]{x^3}}{\sqrt[3]{x}} = \frac{x^{3/4}}{x^{1/3}} = x^{5/12}$

c. $64^{x-1} = 16^{x+2}$

$(4^3)^{x-1} = (4^2)^{x+2}$

$4^{3x-3} = 4^{2x+4}$

$3x-3 = 2x+4$

$x = 7$

d. $\left(\frac{15c^7d^{-14}}{45c^{-7}d^{-12}}\right)^3$

$\left(\frac{1c^{14}}{3d^2}\right)^3$

$\frac{1c^{42}}{27d^6}$

e. $\sqrt[2]{7^5} = 49^{4x-3}$

$7^{5/2} = (7^2)^{4x-3}$

$\frac{5}{2} = 8x-6$ $\quad x = \frac{17}{16}$

$\frac{17}{2} = 8x$

f. $8^x = 2^6$

$(2^3)^x = 2^6$

$3x = 6$

$x = 2$

g. $\left[x^{\frac{1}{3}}\right]^3 = 2^3$

$x = 8$

h. $x^{14\sqrt{2}} \cdot x^{7\sqrt{2}} \cdot x^{-3\sqrt{2}}$

$x^{18\sqrt{2}}$

i. $18^x = 10^{x+2}$

$10^{2x} = 10^{x+2}$

$2x = x+2$

$x = 2$

10a. $\log_3 \sqrt[5]{9} = x$

$3^x = \sqrt[5]{9}$

$3^x = 3^{2/5}$

$x = 2/5$

b. $\log_x \sqrt{3} = \frac{1}{4}$

$\left(x^{\frac{1}{4}}\right)^4 = \left(\sqrt{3}\right)^4$ $\quad x = 9$

d. $\log_x 27 = \frac{3}{2}$

$(x^{\frac{3}{2}})^{\frac{2}{3}} = 27^{\frac{2}{3}}$

$x = 9$

e. $\log x = \frac{1}{2}\log 81 - \frac{1}{3}\log 27$

$\log x = \log 81^{\frac{1}{2}} - \log 27^{\frac{1}{3}}$

$\log x = \log 9 - \log 3$

$\log x = \log 3$

$x = 3$

f. $\log_7 x + \log_7 (x-6) = 1$

$\log_7 x(x-6) = 1$

$7^1 = x(x-6)$

$0 = x^2 - 6x - 7$

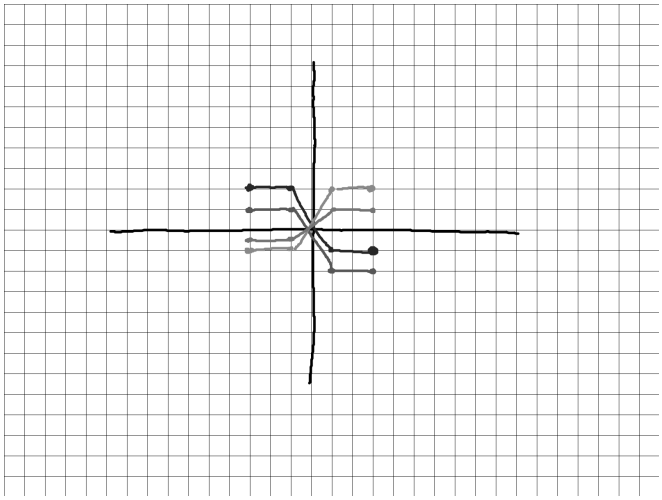
$(x-7)(x+1)$

$x = 7, x \neq -1$

g) $\log_7 x = \log 16 + \log \frac{1}{2}$

$\log_7 x = \log 8$

$x = 8$



exp	D: $\mathbb{R}$	R: $y>0$
log	D: $x>0$	R: $\mathbb{R}$
odd poly	$\mathbb{R}$	$\mathbb{R}$
even	$\mathbb{R}$	varies
fraction	cannot $\div$ by 0	
radical	no in $\sqrt{-\#}$	

Calculator

4a

$x^3 = x$

$x^3 - x = 0$

$x(x^2-1) = 0$

$x(x+1)(x-1) = 0$

Closure

What do you need to do to prepare for the exam?

Be prepared to share.