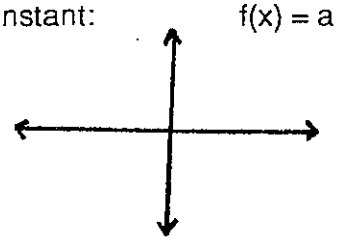
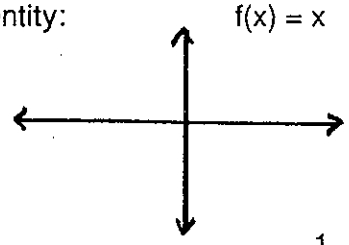
Parent Functions

Name _____

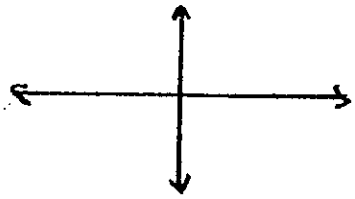
Constant: $f(x) = a$



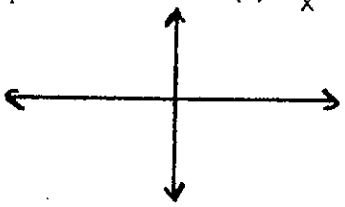
Identity: $f(x) = x$



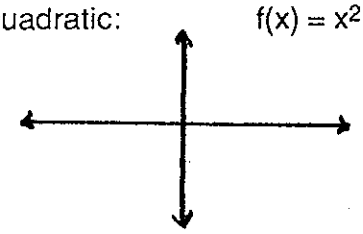
Absolute Value: $f(x) = |x|$



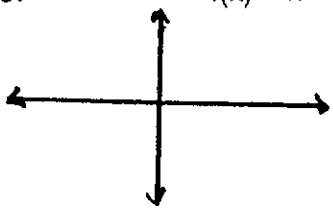
Reciprocal: $f(x) = \frac{1}{x}$



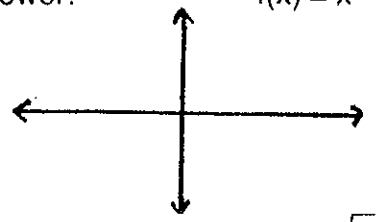
Quadratic: $f(x) = x^2$



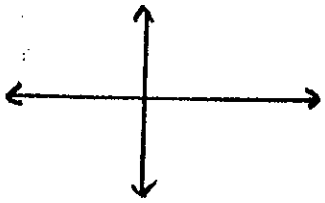
Cubic: $f(x) = x^3$



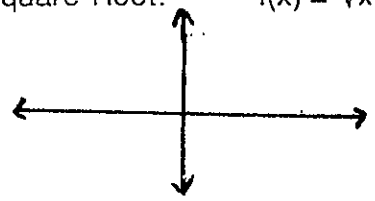
Power: $f(x) = x^n$ (n is even)



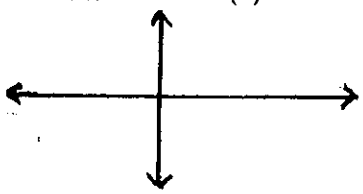
$f(x) = x^n$ (n is odd)



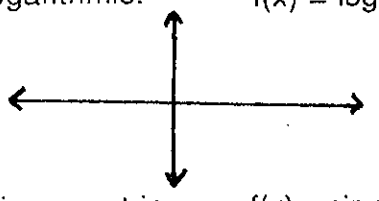
Square Root: $f(x) = \sqrt{x}$



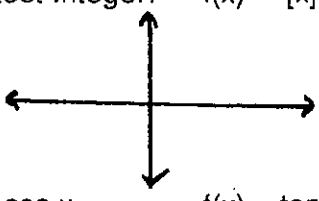
Exponential: $f(x) = a^x$



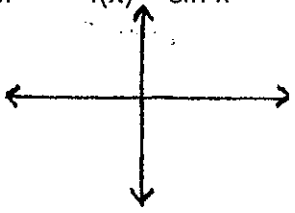
Logarithmic: $f(x) = \log_a x$



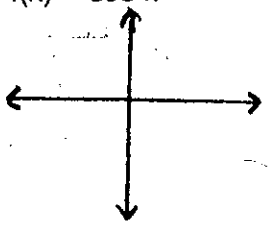
Greatest Integer: $f(x) = [x]$



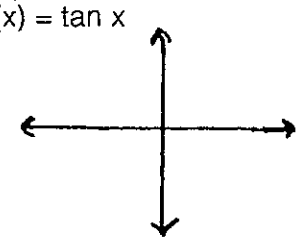
Trigonometric: $f(x) = \sin x$



$f(x) = \cos x$



$f(x) = \tan x$

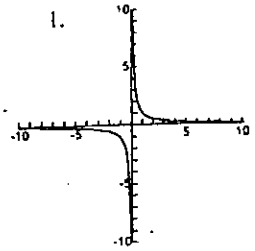


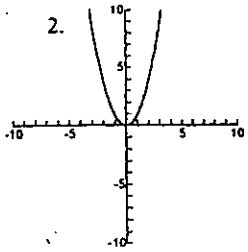
Non-Calculator

Name:
Period:

Write the parent function of each graph.

1. _____.
2. _____.
3. _____.
4. _____.
5. _____.
6. _____.
7. _____.
8. _____.
9. _____.
10. _____.
11. _____.
12. _____.
13. _____.
14. _____.
15. _____.

1.


2.


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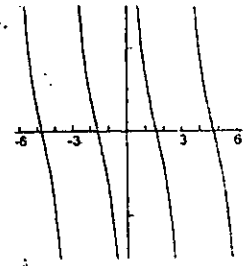

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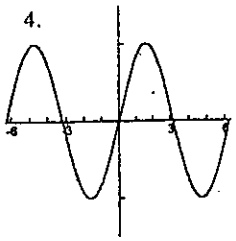

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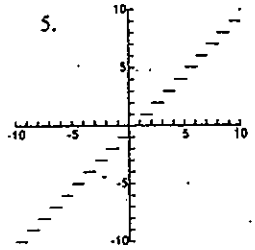

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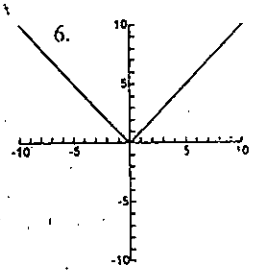

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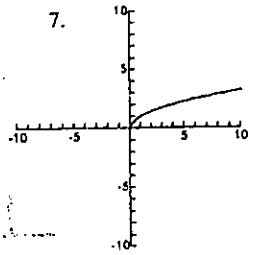
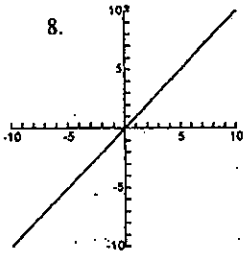


8.


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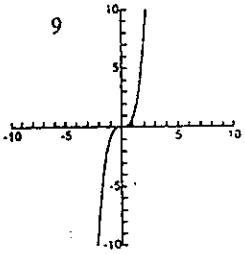

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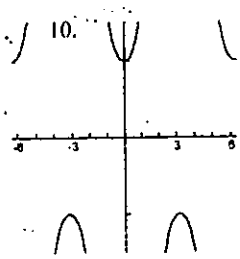

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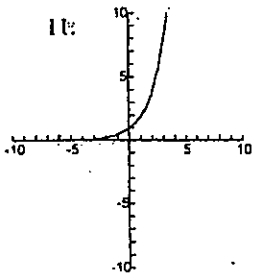

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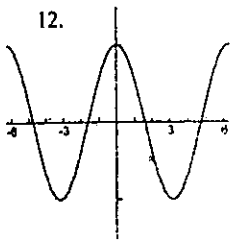

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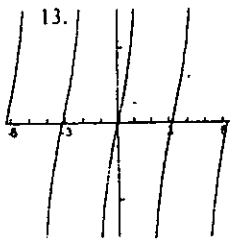

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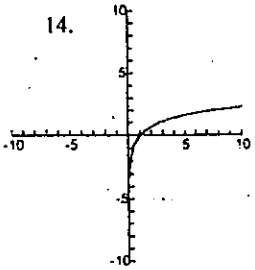

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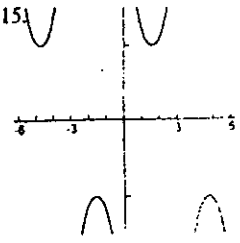
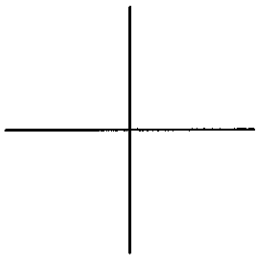


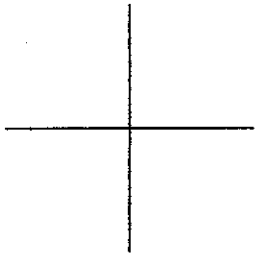
Graphing Exponential and Logarithmic Functions

Graph by hand and fill in required the information

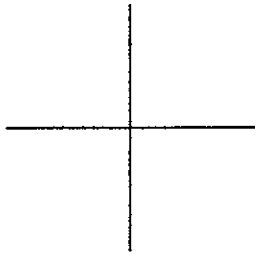
1. $y = e^x$
   y-intercept: _____.
   Domain: _____.
   Range: _____.
   Asymptote: _____.



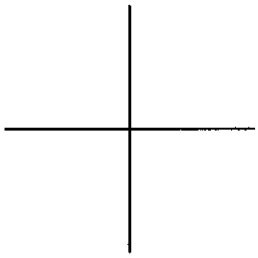
2. $y = \ln x$
   x-intercept: _____.
   Domain: _____.
   Range: _____.
   Asymptote: _____.



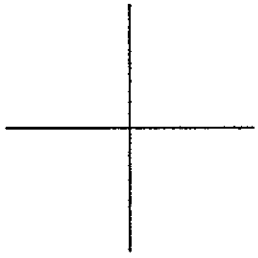
3. $y = \log x$
   x-intercept: _____.
   Domain: _____.
   Range: _____.
   Asymptote: _____.



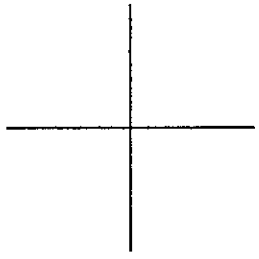
4. $y = -e^x$
   y-intercept: _____.
   Domain: _____.
   Range: _____.
   Asymptote: _____.



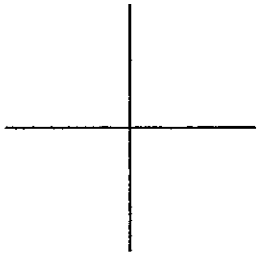
5. $y = e^{-x}$
   y-intercept: _____.
   Domain: _____.
   Range: _____.
   Asymptote: _____.



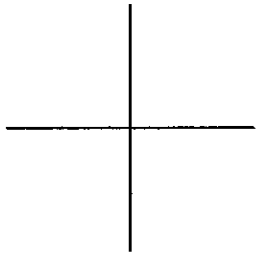
6. $y = -e^{-x}$
   y-intercept: _____.
   Domain: _____.
   Range: _____.
   Asymptote: _____.



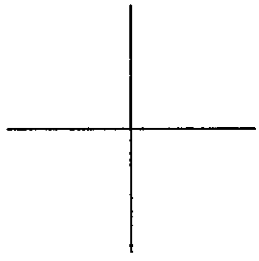
7. $y = -\ln x$
   x-intercept: _____.
   Domain: _____.
   Range: _____.
   Asymptote: _____.



8. $y = \log(-x)$
   x-intercept: _____.
   Domain: _____.
   Range: _____.
   Asymptote: _____.

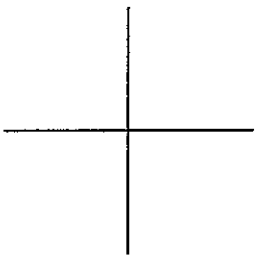


9. $y = -\ln(-x)$
   x-intercept: _____.
   Domain: _____.
   Range: _____.
   Asymptote: _____.



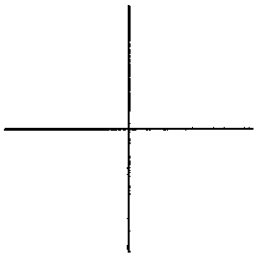
10. $y = 30 - e^x$

y-intercept: _____.
Domain: _____.
Range: _____.
Asymptote: _____.



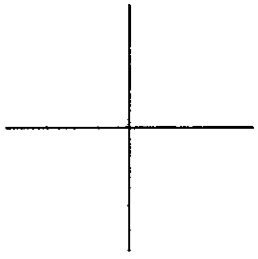
11. $y = \ln(-x) + 10$

Domain: _____.
Range: _____.
Asymptote: _____.



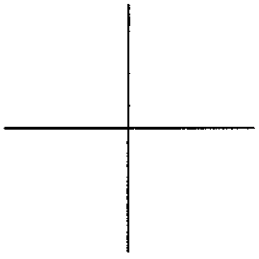
12. $y = e^x - 21$

y-intercept: _____.
Domain: _____.
Range: _____.
Asymptote: _____.



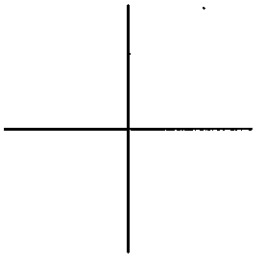
13. $y = 3 - \ln(-x)$

Domain: _____.
Range: _____.
Asymptote: _____.



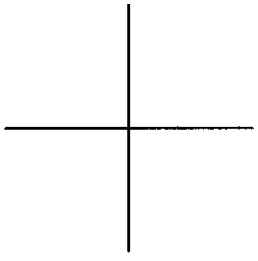
14. $y = -e^{-x} + 200$

y-intercept: _____.
Domain: _____.
Range: _____.
Asymptote: _____.



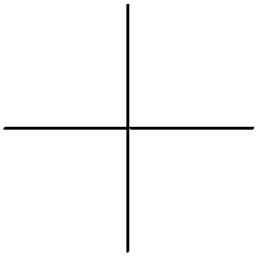
15. $y = 7 - \log x$

Domain: _____.
Range: _____.
Asymptote: _____.



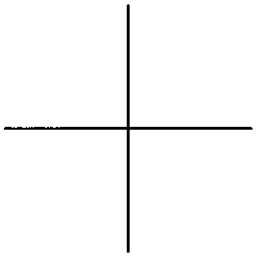
16. $y = e^{-x} - 25$

y-intercept: _____.
Domain: _____.
Range: _____.
Asymptote: _____.



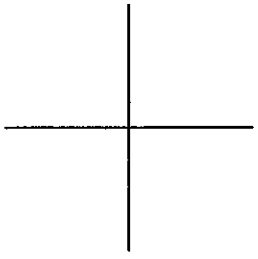
17. $y = \log(-x) - 200$

Domain: _____.
Range: _____.
Asymptote: _____.



18. $y = 600 + e^x$

y-intercept: _____.
Domain: _____.
Range: _____.
Asymptote: _____.



Calculus Review

Name:_____

Logs and Exponential

Evaluate each of the following expressions :

1. $8^{5/3}$
2. $-25^{3/2}$
3. $\log_6 216$
4. $\log_7\left(\frac{1}{49}\right)$
5. $\log_2 \sqrt[3]{2}$
6. $\log_2\left(\frac{\sqrt[4]{32}}{2}\right)$
7. $\log_{10} 0.00001$
8. $\ln e$

Solve each of the following equations. Round your answers to the nearest hundredth.

9. $\log 2 + \log x = 1$
10. $4^x = 128$
11. $\log_3 x = -2$
12. $3^p = 42$
13. $\log_2 x = 3$
14. $\left(\frac{1}{27}\right)^{3x} = 3^{2x-1}$
15. $2e^x = 14$
16. $2^{2x+1} = 3^{x+1}$
17. $\ln(x+4) - \ln(x+2) = \ln x$
18. $\log x + \log(x-15) = 2$
19. $\log(\log x) = 2$
20. $\log(2t-1) = \log 4 + \log(t-3)$
21. $64^{2x+1} = 8^{-x+2}$
22. $2^{x+1} + 3 = 9$
23. $\log(7x - 4) = 1 + \log(x-1)$
24. $5^{x-1} + 2 = 6$
25. $3^{2x-5} - 4 = 5$

Express each as the sum or difference of simpler logs .

26. $\log_b\left(\frac{x}{y^2}\right)$
27. $\log_b \sqrt[4]{xy^2}$

Express as a single logarithm

28. $\frac{1}{2}\log_b y - 4\log_b x$
29. $\frac{1}{2}(\log_b x + \log_b y) - 2\log_b z$

Sketch a graph of the following functions and identify the asymptote. Determine the domain and range:

30. $f(x) = -\log(x+3) - 2$
31. $f(x) = 2^{x+1} + 7$

Unit Circle

Calculus Review

No Calculators!! Exact answers

1) $\sin \frac{\pi}{6}$

2) $\cos \frac{5\pi}{3}$

3) $\tan \frac{7\pi}{4}$

4) $\cos \frac{5\pi}{6}$

5) $\tan \frac{\pi}{4}$

6) $\csc \frac{2\pi}{3}$

7) $\tan \frac{\pi}{2}$

8) $\sec \frac{5\pi}{4}$

9) $\sin \frac{4\pi}{3}$

10) $\sin \frac{\pi}{2}$

11) $\cos \frac{7\pi}{4}$

12) $\tan \frac{11\pi}{6}$

13) $\cos 3\frac{\pi}{2}$

14) $\sin \pi$

15) $\cot \frac{\pi}{3}$

16) $\tan \frac{2\pi}{3}$

17) $\cos \frac{3\pi}{4}$

18) $\sin \frac{5\pi}{6}$

19) $\cos \frac{7\pi}{6}$

20) $\sin \frac{5\pi}{4}$

21) $\tan \frac{4\pi}{3}$

22) $\csc \frac{5\pi}{3}$

23) $\cos \frac{3\pi}{2}$

24) $\tan \frac{11\pi}{6}$

25) $\cos 0$

26) $\sin \frac{4\pi}{3}$

27) $\tan \frac{3\pi}{4}$

28) $\tan \frac{7\pi}{6}$

29) $\sec \frac{5\pi}{4}$

30) $\sin \frac{11\pi}{6}$

Calculus Review **Name:** _____

Solving Trig Equations
Inverse Trig Functions

*** Entire worksheet Non-Calculator**

Find ***All*** solutions to the following trig. equations:

1) $\sin x = \frac{1}{2}$

2) $\cos x = \frac{\sqrt{3}}{2}$

3) $2\cos x = -1$

4) $\csc x = 2$

5) $\sqrt{3}\ \tan x = 1$

6) $\sqrt{2}\ \sec x = 1$

7) $\cot x = -\sqrt{3}$

8) $\sec x = -\frac{2}{\sqrt{3}}$

9) $\cot x = 0$

Solve each equation in the interval $[0,2\pi)$:

10) $2\sin x \cdot \cos x - \cos x = 0$

11) $\sqrt{2}\tan x \cdot \cos x = \tan x$

12) $\tan x \cdot \sin^2 x = \tan x$

13) $\sin x \cdot \tan^2 x - \sin x = 0$

14) $\tan^2 x = 3$

15) $\sin^2 x = \frac{3}{4}$

16) $4\cos^2 x - 4\cos x + 1 = 0$

17) $2\sin^2 x + 3\sin x = -1$

18) $\sin^2 x - 2\sin x = 0$

19) $2\sin^2 x + 3\sin x = 2$

20) $2\tan^2 x = -3\sec x$

21) $2\sin^2 x = 1 - \cos x$

*** Entire worksheet Non-Calculator**

Find each value :

22) $\sin^{-1} 1$

23) $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$

24) $\tan^{-1}\left(-\frac{1}{\sqrt{3}}\right)$

25) $\cos^{-1}\left(-\frac{1}{2}\right)$

26) $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

27) $\tan^{-1} 0$

Find each of the value (NO CALCULATOR)

28) $\sin\left(\tan^{-1} 1\right)$

29) $\cos\left(\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)\right)$

Calculus Review
Trig Identities

Name:
Period :

Simplify each expression –write in terms of sines, cosines, and tangents .

1) $\tan x \cos x$

2) $\cot x \tan x$

3) $\sec x \cos x$

4) $\dfrac{1+\tan^2 x}{\csc^2 x}$

5) $\dfrac{1-\cos^2 x}{\sin x}$

6) $\dfrac{\tan x \csc x}{\sec x}$

7) $(\sec^2 x + \csc^2 x) - (\tan^2 + \cot^2 x)$

8) $\tan x + \cot x$

9) $\sin\theta + \tan\theta \cos\theta$

10) $(\sec\theta + \csc\theta)^2 \cot\theta$

Look up the following identities :

P. 580 in your book

11) $\sin 2x$

12) $\cos 2x$

13) $\tan 2x$

14) $\sin(x+\beta)$

15) $\sin(x-\beta)$

16) $\cos(x+\beta)$

17) $\cos(x-\beta)$

18) $\tan(x+\beta)$

19) $\tan(x-\beta)$

Calculus Review
Trig. Graphing Name:

Graph each over 2 periods. Show the scale and state the domain, range, period, and amplitude.

1) $y = -2\sin x + 3$

2) $y = \frac{1}{2}\cos\theta - 1$

3) $y = \csc x + 1$

4) $y = 2\tan x - 1$

5) $y = 3\cos x - 1$

6) $y = 2\sin x - \pi$

For each function, state the period and any phase shift.

7) $f(x) = 3\sin(2x) + 1$

8) $g(x) = -2\cos(\pi x) - 3$

9) $f(x) = 4\tan\frac{\pi x}{5} - 5$

10) $k(x) = \csc 2\pi x - 1$

11) $m(x) = 3\cos 3x$

12) $s(x) = 5\cos(\pi x - 2) + 1$

13) $g(x) = 3\sin(2x - \pi) + 3$

14) $k(x) = -2\tan(4x - 3) + 1$

15) $f(x) = 3\sec(\pi x - 1) - 3$

16) $w(x) = 5\sin(2\pi x - 3) + 4$

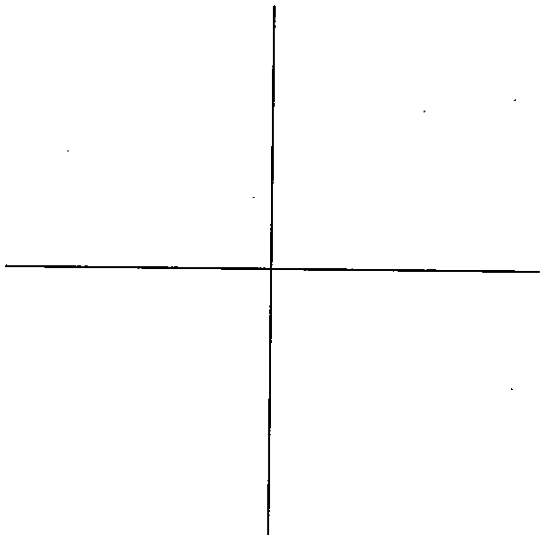
Calculus Review
Rational Functions

Name:
Period:

NO CALCULATORS

For each function state: (a) vertical asymptotes, (b) end-behavior asymptotes, (c) x-intercepts, (d) y-intercepts and (e) domain. If something exist, say so. Then, sketch the graph of the function.

1) $f(x)=\dfrac{(2x-3)}{(x+2)}$



A) V.A

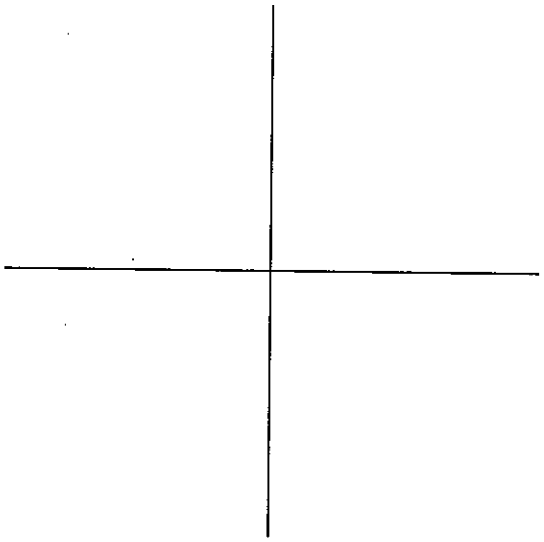
B) E.B.A.

C) x-intercepts

D) y-intercept

E) Domain

2) $f(x)=\dfrac{(x+2)}{(x^2+2x-3)}$



A) V.A

B) E.B.A.

C) x-intercepts

D) y-intercept

E) Domain

3) $g(x) = \dfrac{5}{(x^2-1)}$

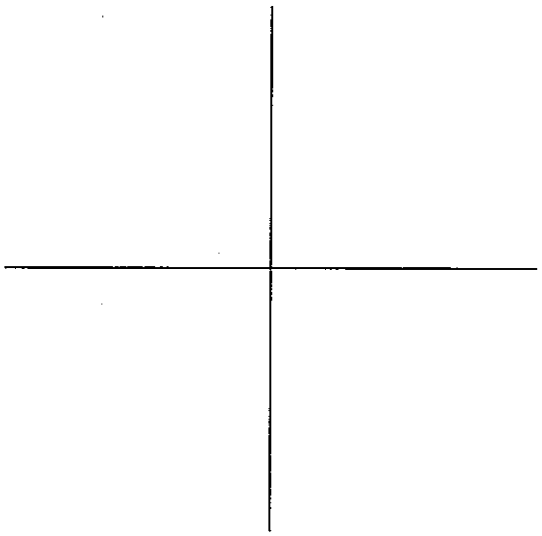
A) V.A

B) E.B.A.

C) x-intercepts

D) y-intercept

E) Domain



4) $f(x) = \dfrac{x+2}{x^2-x-12}$

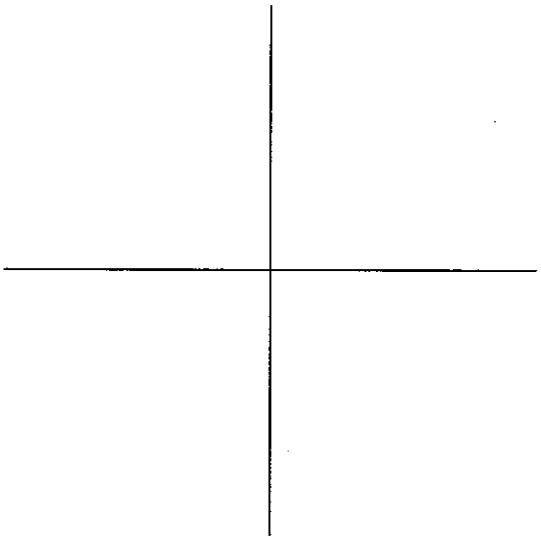
A) V.A

B) E.B.A.

C) x-intercepts

D) y-intercept

E) Domain



5) $y = \dfrac{3x-1}{x+2}$

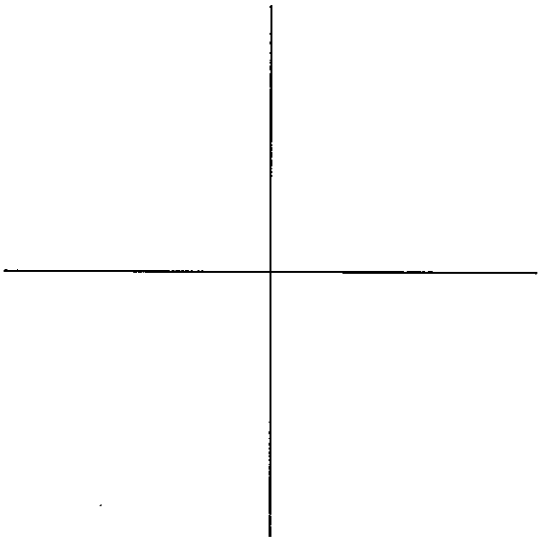
A) V.A

B) E.B.A.

C) x-intercepts

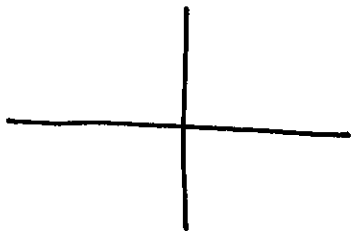
D) y-intercept

E) Domain



I. For each piecewise function: graph, state the domain and then evaluate

a) $f(x) = \begin{cases} x+3 & x<0 \\ 3 & 0 \le x \le 2 \\ 2x-1 & x>2 \end{cases}$



Domain:

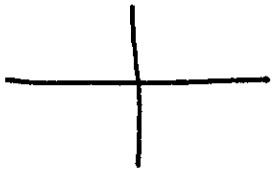
Evaluate $f(0) =$

$f(1) =$

$f(3) =$

$f(-2) =$

b) $f(x) = \begin{cases} 2x+1 & x \le 1 \\ x^2-2 & x>1 \end{cases}$



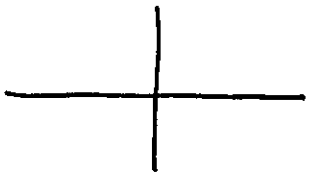
Domain:

Evaluate $f(0) =$

$f(1) =$

$f(2) =$

c) $f(x) = \begin{cases} x & -1 < x < 0 \\ \sqrt{x+1} & x \ge 3 \end{cases}$



Domain:

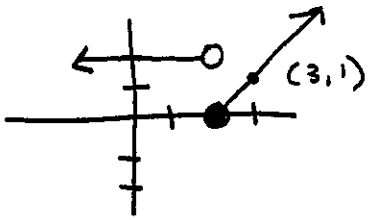
Evaluate $f(-1) =$

$f(-\frac{1}{2}) =$

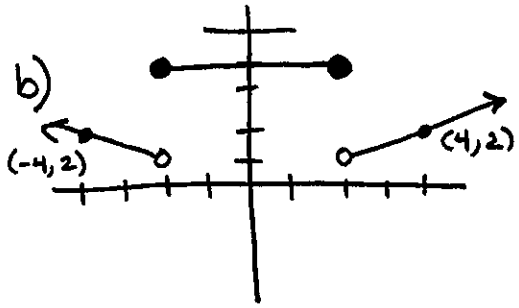
$f(3) =$

II. Write the piecewise function for the given graph

a)



b)



III. Solve:

a) $4^{2x-1} = 7$

b) $5^{x+2} = 16$

c) $8^{3x-1} = 6$