Algebra II Semester 2 Final Review Packet

Name Key

Period/Date _____

Find an equation for the inverse relation.

$y = 2x + 1$

$x = 2y + 1$

$y = \frac{1}{2}x - \frac{1}{2}$

$y = x^2 + 2$

$y = \pm\sqrt{x - 2}$

$y = \frac{1}{2} - \frac{2}{3}x$

$\frac{2}{3}y = \frac{1}{2} - x$

$y = \frac{3}{4} - \frac{3}{2}x$

$f(x) = 3 - x$

$f^{-1}(x) = 3 - x$

Rewrite the equation in exponential form.

$\log_7 49 = 2$

$7^2 = 49$

$\log_{16} 4 = \frac{1}{2}$

$16^{\frac{1}{2}} = 4$

$\log_5 125 = 3$

$5^3 = 125$

$\log_3 \frac{1}{9} = -2$

$3^{-2} = \frac{1}{9}$

Evaluate the logarithm without using a calculator.

$\log_9 81$

2

$\log_3 \frac{1}{3}$

-1

$\log_{27} 3$

$\frac{1}{3}$

Expand the expression.

$\log_3 3x$

$\log_3 3 + \log_3 x$

$1 + \log_3 x$

$\log \frac{2x}{5}$

$\log 2x - \log 5$

$\log 2 + \log x - \log 5$

$\log_7 x^2 y$

$\log_7 x^2 + \log_7 y$

$2\log_7 x + \log_7 y$

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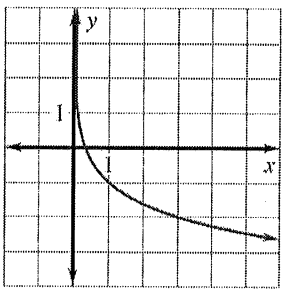
Match the following graphs to their respective equations.

A.



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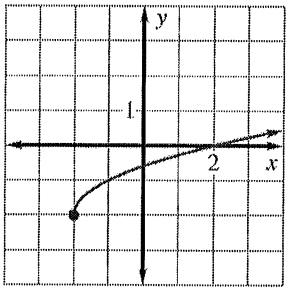

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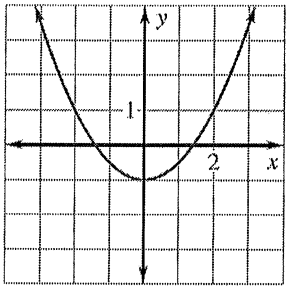

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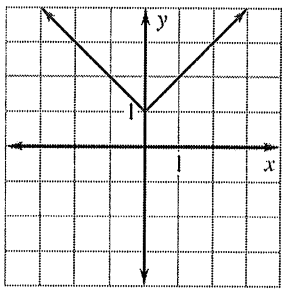

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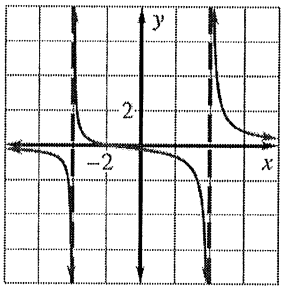

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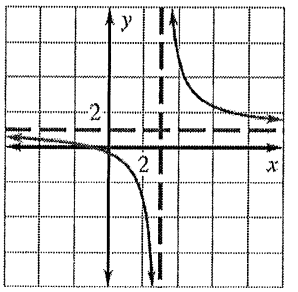

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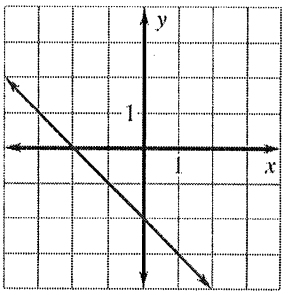

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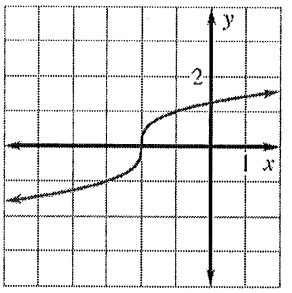
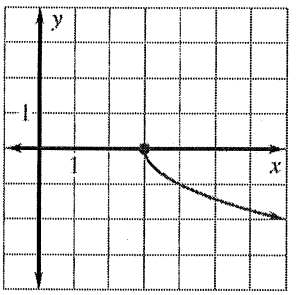


I.



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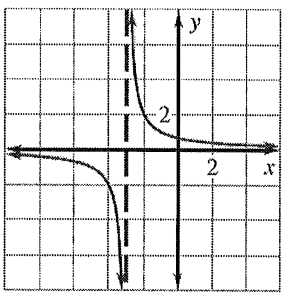

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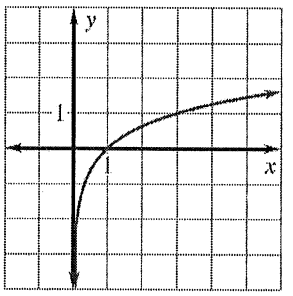

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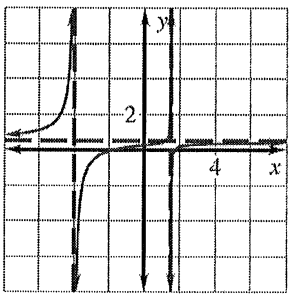

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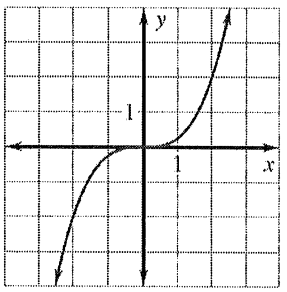

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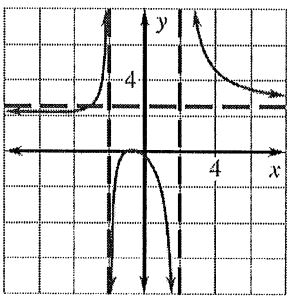

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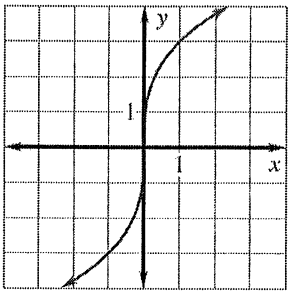

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Fill in the letter of the graphs to their matching equations.

F $f(x) = \frac{x+1}{x-3}$

K $f(x) = \log_3 x$

A $f(x) = -\log_3 x - 1$

D $f(x) = |x| + 1$

G $f(x) = -x - 2$

M $f(x) = \frac{1}{4}x^3$

H $f(x) = \sqrt[3]{x+2}$

B $f(x) = \sqrt{x+2} - 2$

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

E $f(x) = \frac{2x+4}{x^2-16}$

N $f(x) = \frac{5x^2+7x+2}{2x^2-8}$

O $f(x) = 3\sqrt[3]{x}$

I $f(x) = -\sqrt{x-3}$

J $f(x) = \frac{2}{x+3}$

L $f(x) = \frac{x^2-3}{2x^2+5x-12}$

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Condense the expression.

$\log 4 + 3\log x + \log y$

$\log(4x^3y)$

$3\log x + \log 4 - \log x - \log 6$

$\log\left(\frac{4x^3}{6x}\right) = \log\left(\frac{2x^2}{3}\right)$

$2\ln x - \ln 3 + \ln 6$

$\ln\left(\frac{6x^2}{3}\right)$

$\ln(2x^2)$

Tell whether *x* and *y* show *direct variation*, *inverse variation*, or *neither*.

$y = 2x + 3$ neither

$y = \frac{x}{3}$ direct

$x = \frac{3}{y}$ inverse

$\frac{1}{2}xy = 2$ inverse

The variables *x* and *y* vary inversely. Use the given values to write an equation relating *x* and *y*. Then find *y* when *x* = 0.5.

$x = 4, y = 6$

$y = \frac{a}{x}$

$a = 24$

$y = \frac{24}{x}$

$y = 48$

$x = 48, y = \frac{1}{12}$

$y = \frac{a}{x}$

$a = 4$

$y = \frac{4}{x}$

$y = 8$

Find the vertical and horizontal asymptotes of the graph of the function. Identify the *x*-intercept(s)

$f(x) = \frac{4}{x-2} + 1$

V.A. $x = 2$

H.A. $y = 1$

x-int: $(-2, 0)$

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

V.A. $x = \frac{3}{2}$

HA. $y = \frac{1}{2}$

x-int: $(-1, 0)$

$y = \frac{x^2 + 2x - 15}{x^2 - 36}$

V.A. $x = 6, x = -6$

H.A. $y = 1$

x-int: $(-5, 0), (3, 0)$

$y = \frac{2x-1}{x^2+7}$

VA: none

HA: $y = 0$

x-int: $(\frac{1}{2}, 0)$