Rational Functions Investigation: Closure

Name: ______________________________

Each rational function is represented in standard form and factored form. Use the function formula to identify the long-run and short-run behavior of each rational function. (Write DNE for does not exist.) Then match the function to its graph.

1.
$$f(x) = \frac{3x+9}{x+4} = \frac{3(x+3)}{x+4}$$

2.
$$f(x) = \frac{2x^2-12x+16}{x^2-7x+12} = \frac{2(x-4)(x-2)}{(x-3)(x-4)}$$

3.
$$f(x) = \frac{-x^2+4}{x^2+3x} = \frac{-1(x+2)(x-2)}{x(x+3)}$$

4.
$$f(x) = \frac{3x^2-12}{x^2-9} = \frac{3(x-2)(x+2)}{(x-3)(x+3)}$$

$\lim_{x\to-\infty} f(x) =$	$\lim_{x\to\infty} f(x) =$	Horizontal asymptote:	y-intercept:
Vertical asymptote:	x-intercept:	Hole:	GRAPH:
$\lim_{x\to-\infty} f(x) =$	$\lim_{x\to\infty} f(x) =$	Horizontal asymptote:	y-intercept:
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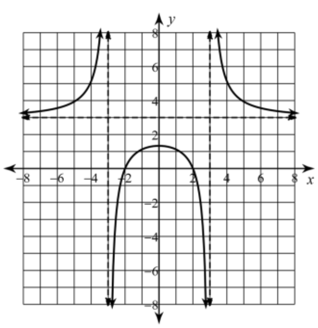
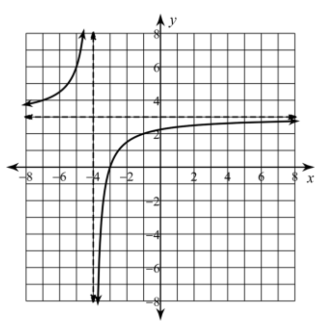
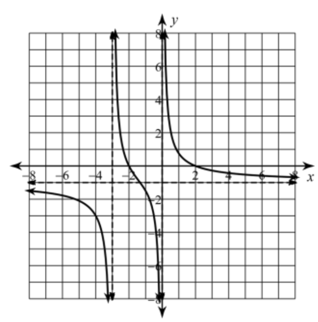
A



B



C



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