

Name:

Class Period:

SM3

Worksheet 3.E ~ Asymptotes and Intercepts

Problems 1-4: Find the domain of the function.

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

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

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

4. $f(x) = \frac{2}{x^2-5x}$

Problems 5-6: Find the asymptotes.

5. $f(x) = \frac{2x+1}{5-4x}$

HA:

VA:

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

HA:

VA:

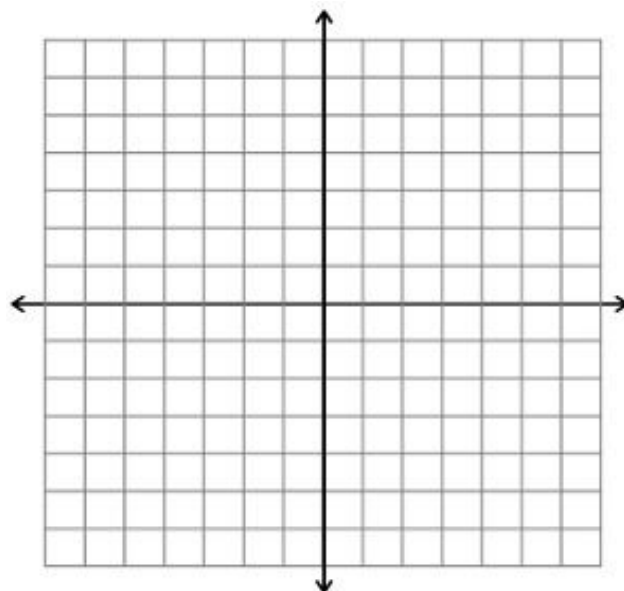
7. Let $f(x) = \frac{-2}{x^2+3x}$. What values of x have to be *excluded* from the domain of f ?

- A. Only 0 B. Only 3 C. Only -3 D. Only 0, 3 E. Only 0, -3

8. Decide if $x+3$ is a factor of $P(x)$. If it is, find all the zeros, graph and write in factored form. If not find y when $x = 3$.

$P(x) = -2x^3 - 5x^2 + 24x + 63$

Graph #8 without a Calculator. MAKE SURE YOU LABEL.



Problems 9-14: Sketch the graph using asymptotes and intercepts. List asymptotes as equations and intercepts as ordered pairs.

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

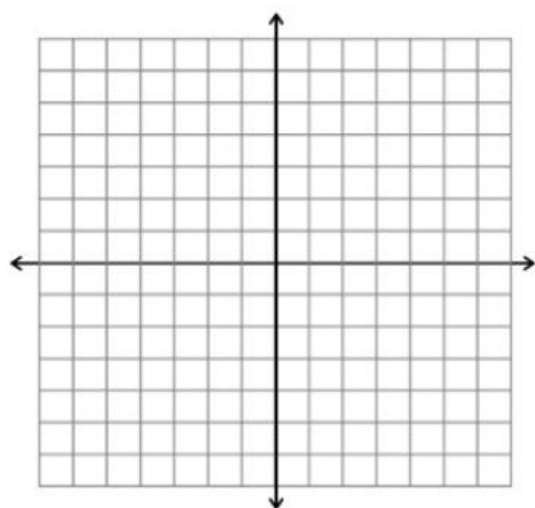
HA:

VA:

x-Intercept (,)

y-Intercept (,)

TRANSFORMATION FORM:



10. $f(x) = \frac{-2x}{x+5}$

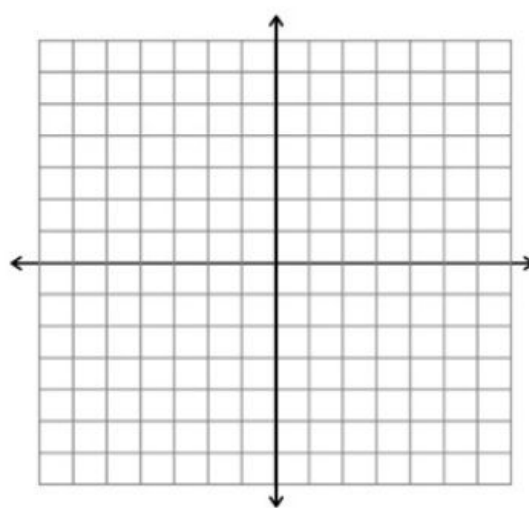
HA:

VA:

x-Intercept (,)

y-Intercept (,)

TRANSFORMATION FORM:



11. $f(x) = \frac{12x-6}{6x+2}$

HA:

VA:

x-Intercept (,)

y-Intercept (,)

12. $f(x) = \frac{5x-2}{2x-1}$

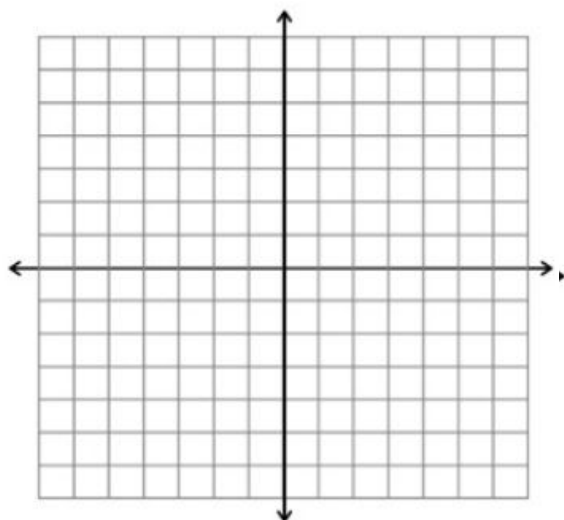
HA:

VA:

x-Intercept (,)

y-Intercept (,)

TRANSFORMATION FORM:



TRANSFORMATION FORM:

13. $f(x) = \frac{5-2x}{x+4}$

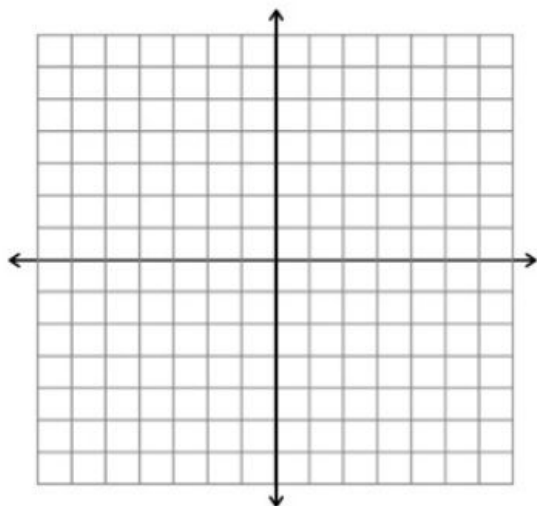
HA:

VA:

x-Intercept (,)

y-Intercept (,)

TRANSFORMATION FORM:



14. $f(x) = \frac{4-7x}{2x-5}$

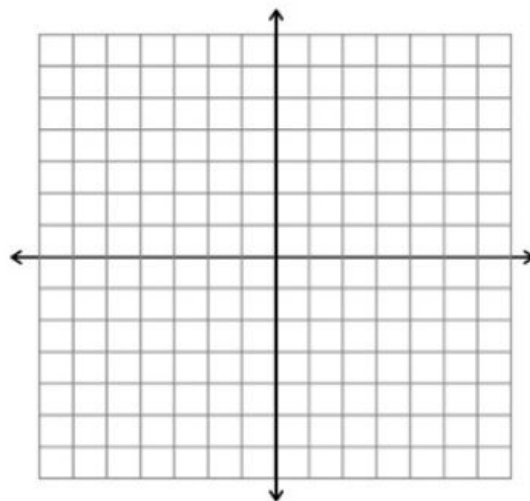
HA:

VA:

x-Intercept (,)

y-Intercept (,)

TRANSFORMATION FORM:



15-21: Review!

15. Simplify the expression. $\frac{x^2 - 7x - 8}{3x^2 - 24x} \cdot \frac{4x^3}{x^2 - 1}$

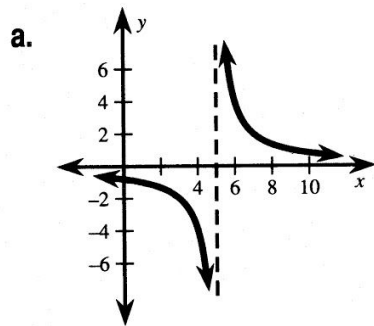
16. Subtract. $\frac{x}{x^2 - x - 30} - \frac{1}{x + 5}$

17. Solve the equation. Check for extraneous solutions.

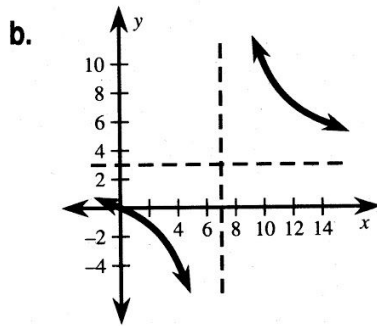
$$\frac{x}{x-4} + 1 = \frac{4}{x-4}$$

Problems 18–20. Match the function with its graph.

18. $f(x) = \frac{8x}{x+2}$



19. $f(x) = \frac{4}{x-5}$



20. $f(x) = \frac{3x}{x-7}$

